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The rise and fall of Africa's bureaucratic bourgeoisie: public employment and the income elites of postcolonial Kenya and Tanzania

Rebecca Simson

PhD Candidate in Economic History, LSE
Department of Economic History

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International Inequalities Institute

The London School of Economics and Political Science

Houghton Street

London

WC2A 2AE

Email: Inequalities.institute@lse.ac.uk

Web site: www.lse.ac.uk/III

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Abstract

In 1961 Frantz Fanon scathingly characterised the emerging African elite as a bourgeoisie of the civil service. Many others have since described Africa's public sector employees as a privileged rentier class that grew disproportionately large in relation to the continent's under-developed private sector. Is this characterisation accurate? Using household budget survey and administrative data from Kenya and Tanzania, this paper aims to situate public sector employees in two African countries within their respective national income distributions and establish the share of high-income households that were headed by public servants. It finds that while public sector employees formed a considerable share of the top 1% - 0.1% at independence, their share of the broader middle class was never that large and fell substantially over the postcolonial era. In 1975 Kenyan public sector employees comprised roughly 36% of the top income decile, but by 1994 this ratio had dropped to 30% and by 2005/06 to 17%. In Tanzania the public sector share of the top decile fell from an estimated 25% in 1969 to 14% in 2011/12. In both countries moreover, public sector-headed households relied on multiple income sources to meet household consumption needs during the economic crises of the 1980s and early 1990s. Without recourse to secondary incomes from farming, businesses or other employment, public sector-headed households would have seen a considerably larger relative income decline. The corollary to the declining share of public sector employees among high income earners was an increase in the share of private sector employees and business owners at the top of the income distribution. This suggests that after a long teething period, East Africa's private sector may finally be coming into its own.

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Introduction

Many of Africa's early independence scholars have argued that public servants comprised an unusually large share of the richest ranks of postcolonial African society.[1] They feared that this dominant public sector elite would crowd out the continent's under-developed private sector and make the upper and middle classes too beholden to the state to act as an independent economic interest group and counterweight to the political class. During the economic downturn of the 1980s and early 1990s such research on class stratification in Africa waned, but the resurgence in economic growth in the 2000s has revived the academic interest in the topic once more. A flurry of recent papers have speculated that Africa's middle class may finally be coming into its own, embodied by a young, assertive, urban, private sector-oriented elite, contrasted with the public sector elite of the 1960s.[2] Other scholars, however, have treaded more cautiously, questioning the relevance of class analysis to the African context and cautioning that the same political power dynamics as in earlier periods will determine who gains during this latest growth episode.[3]

The distinction between an 'old' and 'new' middle class has also emerged in literature on the global middle classes. It posits the old, traditional middle class, which was dominated by public sector employees and other professionals and espoused 'collectivist, national modernization paradigms', against the new middle class which promotes neoliberal values, celebrating entrepreneurship, global linkages and trade.[4] Parker's work on Latin America makes a similar point, while Donner and De Neve discuss the Indian context.[5] Do we see a similar shift in Africa?

Recent literature on this topic is inconclusive. Antoinette Handley discusses the extent to which an independent private sector is emerging in Africa, cautiously concluding that the private sector is playing a larger role in the African economy today.[6] Leonardo Arriola's recent work on financial liberalisation in Africa argues that some of the structural adjustment reforms of the 1980s and 1990s has reduced the state's control

[1] Frantz Fanon, *The Wretched of the Earth* (New York: Grove Weidenfeld, 1963); Issa G. Shivji, *Class Struggles in Tanzania* (London: Heinemann, 1976); Rene Dumont, *False Start in Africa* (New York: Praeger Publishers, 1966); Larry Diamond, 'Class Formation in the Swollen African State', *The Journal of Modern African Studies*, 25.4 (1987), 567–96.
[2] Maurice Mubila and Mohamed-Safouane Ben Aissa, *The Middle of the Pyramid: Dynamics of the Middle Class in Africa*, Market Brief (Tunis, 2011); Mthuli Ncube and Charles Leyeka Lufumpa, *The Emerging Middle Class in Africa* (New York: Routledge, 2015).
[3] For a discussion of this debate, see: Antoinette Handley, 'Varieties of Capitalists? The Middle-Class, Private Sector and Economic Outcomes in Africa', *Journal of International Development*, 27 (2015), 609–27; Scott D. Taylor, *Globalization and the Cultures of Business in Africa: From Patrimonialism to Profit* (Bloomington: Indiana University Press, 2012).
[4] Rachel Heiman, Carla Freeman and Mark Liechty, 'Introduction: Charting an Anthropology of the Middle Classes', in *The Global Middle Classes: Theorising through Ethnography* (Santa Fe: School for Advanced Research Press, 2012), p. 15.
[5] David Parker, 'Introduction: The Making and Endless Remaking of the Middle Class', in *Latin America's Middle Class: Unsettled Debates and New Histories*, ed. by David Parker and Louise Walker (Lanham: Lexington Books, 2013); H. Donner and G. De Neve, 'Introduction', in *Being Middle Class in India: A Way of Life*, ed. by H. Donner (London: Routledge, 2011).
[6] Handley.

over the credit market and helped to empower a new business elite, better able to challenge the political status quo through support to opposition parties.[7] This paper contributes to the debate by examining where East Africa's 'privileged' public sector employees fell within their respective national income distributions. Did state employment create the postcolonial elite and middle class? Has its importance withered with time?

The case study countries were driven by practical considerations. Both Kenya and Tanzania publish an array of data series and surveys on employment and earnings. Questions of class and income inequality have also received considerable attention in both countries and as a result there is a rich secondary literature to lean on. Furthermore, other studies have used the Kenya-Tanzania matched pair design to compare two countries with similar endowments but different political trajectories after independence, using them to contrast Tanzania's African socialism with Kenya's capitalist orientation.[8] In this case, however, the focus is on similarities rather than differences. The objective is to see how two countries with different political trajectories conform to the stylized story of an excessively influential public service, and whether the changes wrought by the economic crises of the 1980s and 1990s and subsequent structural adjustment reforms were similar in the two countries.

The history and theory of Africa's 'bureaucratic bourgeoisie'

An urban, African elite was slow to develop in British East Africa in the first half of the 20th century, as colonial rule curtailed social upward mobility by restricting the economic activities open to Africans and limiting their opportunities to gain higher education.[9] Africans in Kenya and Tanzania held less than a third of mid- and senior-level positions in government around 1960, and even fewer senior roles in private industries.[10] Only towards the end of the colonial period did colonial governments begin a hurried expansion of the secondary and tertiary education systems with the explicit aim of educating Africans to the level required to replace European and Asian public servants in mid- and senior cadres. Colonial governments in East Africa also chose to retain the colonial wage structure, bringing Africans in senior positions up to the salary levels of their European predecessors, rather than establishing a new pay scale tailored to local market conditions.[11] This came to concentrate most of the

[7] Leonardo R. Arriola, 'Capital and Opposition in Africa: Coalition Building in Multiethnic Societies', *World Politics*, 65.2 (2013), 233–72.
[8] Joel D. Barkan, *Politics and Public Policy in Kenya and Tanzania*, ed. by Joel D. Barkan (New York: Praeger, 1984); Richard H. Sabot and John B. Knight, *Education, Productivity, and Inequality : The East African Natural Experiment* (Oxford ; New York: Published for the World Bank, Oxford University Press, 1990); Paul Nugent, *Africa since Independence*, 2nd edn (Palgrave Macmillan, 2012).
[9] Diamond; Mahmood Mamdani, *Define and Rule: Native as Political Identity* (Cambridge and London: Harvard University Press, 2012).
[10] Kenya. Ministry of Economic Planning and Development, *High-Level Manpower Requirements and Resources in Kenya, 1964-1970* (Nairobi, 1965); Government of Tanganyika, *Report of the Africanisation Commission* (Dar es Salaam: Government Printer, 1962).
[11] Paul Bennell, "The Colonial Legacy of Salary Structures in Anglophone Africa," *The Journal of Modern African Studies* 20, no. 01 (November 11, 1982).

educated, high-earning manpower in the public sector. Around the same time governments introduced minimum wages for low-skilled urban workers, most of whom worked in the public sector, which raised their earnings relative to unskilled rural workers.[12]

These conditions spawned various theories about public sector privilege. Neo-Marxist scholars of the 1960s and 70s predicted that the over-representation of politicians and public servants in the African national elite would create a rentier class that would align itself with foreign interests and hinder the emergence of an indigenous capitalist class.[13] In 1961 Frantz Fanon spoke of Africa's 'bourgeoisie of the civil service', which he expected would subsume the role of its colonial predecessors and perpetuate the social inequalities of the colonial era.[14] In 1962 Rene Dumont provocatively criticised the level of excess and corruption he had observed in Francophone Africa, likening African elites to 'a modern version of Louis XVI's court', and asserting that '[a] new type of bourgeoisie is forming in Africa, that Karl Marx would hardly have foreseen, a bourgeoisie of the civil service'.[15]

In the 1980s the public choice theorists shifted the focus from class to interest group.[16] They argued that civil servants and urban public sector workers were disproportionately powerful interest groups that used their lobbying power to ensure high wages and low food prices, at the expense of an over-taxed peasantry.

The neopatrimonialism school in contrast, which came to the fore in the 1990s, dispensed of both class and interest groups and instead highlighted ethnic fractures in African societies. [17] As a result, they argued, politicians ruled by dispensing patronage in the form of public sector jobs to ethnic leaders and their followers in exchange for political support. Diamond puts it succinctly when he describes how African 'state offices become "entitlements", giving incumbents immense discretion to use the patronage resources of office not only to enrich themselves, but to assist

[12] Frederick Cooper, *Decolonization and African Society: The Labor Question in French and British Africa* (Cambridge: Cambridge University Press, 1996).
[13] Fanon; Shivji; Mahmood Mamdani, *Politics and Class Formation in Uganda* (New York and London: Monthly Review Press, 1976); Giovanni Arrighi and John S. Saul, 'Socialism and Economic Development in Tropical Africa', *Journal of Modern African Studies*, 6.2 (1968), 141–69.Paul Bennell, 'The Colonial Legacy of Salary Structures in Anglophone Africa', *The Journal of Modern African Studies*, 20.01 (1982), 127; Arrighi and Saul.
[14] Fanon, p. 179.
[15] Dumont, p. 78; 81.
[16] Robert H. Bates, *Markets and States in Tropical Africa : The Political Basis of Agricultural Policies* (Berkeley and London: University of California Press, 1981).
[17] Patrick Chabal and Jean-Pascal Daloz, *Africa Works: Disorder as Political Instrument* (James Currey Publishers, 1999); Pierre Englebert, 'Pre-Colonial Institutions, States, and in Economic Development Tropical Africa', *Political Research Quarterly*, 53.1 (2000), 7–36; Daron Acemoglu and James A. Robinson, 'Why Is Africa Poor?', *Economic History of Developing Regions*, 25.1 (2010), 21–50; Michael Bratton and Nicolas Van De Walle, 'Neopatrimonial Regimes and Political Transitions in Africa', *World Politics*, 46.4 (1994), 453–89.

clients and followers and thereby maintain - and perhaps enlarge - their political base.'[18]

While conceptualising power dynamics in distinct ways, these three theories nonetheless rest on a similar analysis of Africa's postcolonial predicament: resources extracted from society were captured by public sector employees and therefore not invested productively. Furthermore, the lack of a healthy private sector limited government oversight, as there was no independent power base that could hold governments to account. These assertions rest on the assumption that public servants comprised a large share of the comparative wealthy Africans, and that there was little change to these wealth and power relations after independence. Does the empirical evidence support such claims?

Defining and measuring the upper and middle 'classes'

This study builds on the assumption that the economic interests of wealthier members of society reflect the policy priorities of the state. But how should this wealthy strata be defined? At what levels of income, wealth or occupational status do interest groups form and gain political leverage? Many of studies cited above are imprecise about the contours of the privileged public sector elite or middle class that they describe. While some conceptualize power in Africa as dominated by a small clique of politicians with little co-optation of a broader middle class,[19] others assume that political power rests with a relatively broad group of middle class denizens.

Among those studies of social stratification in Africa that do give precise definitions, there are a wide range of alternative approaches. A landmark study on Africa's new elites from 1966 defined this elite as those earning at least £250 per year and with a western education, which put the Kenyan African elite at just below 1% of the labour force.[20] Issa Shivji's study of Tanzania, which coined the term 'bureaucratic bourgeoisie' similarly gave it a narrow definition.[21] Shivji's bureaucratic bourgeoisie comprised political heads of government ministries and departments, top civil servants, top positions in the judiciary, military and party, in combination with economic functionaries in senior roles in the parastatals and public corporations. This description of the bourgeoisie puts it a few thousand people, or in the order of 0.1% of the labour force at the time of the book's writing.

At the other extreme the African Development Bank recently chose to characterise Africa's middle class as individuals with a daily consumption of between US$2-20 (in

[18] Diamond, p. 582.
[19] Nicholas van de Walle, 'Meet the New Boss, Same as the Old Boss? The Evolution of Political Clientelism in Africa', in *Patrons, Clients, and Policies: Patterns of Democratic Accountability and Political Competition*, ed. by Herbert Kitschelt and Steven Wilkinson (Cambridge University Press, 2007), pp. 50–67; Henning Melber, *The Rise of Africa's Middle Class: Myths, Realities and Critical Engagements* (London: Zed Books, 2016).
[20] Based on the EES income distribution and assuming that wage employees were the only Kenyans fitting this description.
[21] Shivji.

PPP terms), subdivided into a floating class (US$2-4), lower middle class ($4-10), and upper middle class ($10-20).[22] While this broader definition put the continent's middle class at 34%, restricting it to the lower and upper middle class reduces the share to 13%. This approach follows Banerjee and Duflo's work on the global middle class which used similarly low thresholds.[23] Implicit in these middle class definitions is the assumption that a larger pool of people with incomes even just a little above subsistence give more people an incentive and ability to engage in political matters beyond those of immediate survival concern.

Whether such strata have any analytical content however, remains an open question. The language of class invokes Marx and Weber, who conceptualised classes as distinct interest groups in conflict with each other. Marx defined class in relation to its ownership of the means of production, with a working class that sells its labour while the bourgeoisie owns capital and employs labour; in between them is a petty bourgeois middle tier of small shop and business owners who sometimes ally with the bourgeoisie and other times with the working class.[24] The Marxist literature recognizes these groups as classes only once its members become aware of their common economic interests ('class in itself') and organise collectively to defend said interests ('class for itself').

Many academics have contended that class in the Marxist or Weberian sense does not describe the African reality, where social stratification remain fluid and ethnic allegiances often trump economic interests. With reference to Kenya specifically, two recent articles have addressed this question empirically, by testing whether social strata based on income, consumption or analogous measures predict political and economic behaviour. Nic Cheeseman finds some signs that middle class Kenyans exhibit stronger support for traditional middle class values, while Deiter Neubert finds little evidence of a distinctly middle class politics.[25]

This study, however, does not directly address the question of class formation or identity. Instead it starts from an empirical angle: are there signs of change to the composition of the elite that would signal the rise of new, or emboldened economic interest groups? Whether these groups represent classes in a Marxist or Weberian sense is a second-order question, but in cannot be answered without an

[22] Mubila and Ben Aissa.
[23] Abhijit V Banerjee and Esther Duflo, 'What Is Middle Class about the Middle Classes around the World?', *Journal of Economic Perspectives*, 22.2 (2008), 3–28.
[24] For a good discussion, see: Roger Southall, *The New Black Middle Class in South Africa* (Johannesburg: Jacana Media, 2016).
[25] Nic Cheeseman, '"No Bourgeoisie, No democracy?" The Political Attitudes of the Kenyan Middle Class', *Journal of International Development*, 27 (2015), 647–64; Dieter Neubert, 'Kenya - an Unconscious Middle Class?: Between Regional-Ethnic Political Mobilisation and Middle Class Lifestyles', in *The Rise of Africa's Middle Class: Myths, Realities and Critical Engagements*, ed. by Henning Melber (London: Zed Books, 2016).

understanding of the economic structure of society, and thus the ability to make predictions about interests and behaviour.[26]

Because of the focus on the relative power of different interest groups, this paper uses relative wealth or income rather than absolute measures. It seeks to rank households in Kenya, Tanzania and Uganda from poor to wealthy and locate where those headed by public sector employees fell in this rank order at different points in time. It will primarily use the top 1% and top 10% of the income or consumption distribution as a proxy for the upper and middle class respectively, allowing us to study the elite composition at two different levels of relative privilege. These are arbitrary cut-offs, but have the advantage of simplicity and precedence in the work of Thomas Piketty.[27] While the top 1% is roughly in keeping with Lloyd's 1966 elite measure, the top 10% is a large enough group to be representative of something more substantial than the ruling clique, yet capturing a stratum of households living above subsistence. It is roughly in line with the AfDB's contemporary definition of the stable middle class (per capita consumption of $4-20), but a far cry from the middle of the income distribution proper.

Despite focusing on a comparatively high strata of society, the top 10% of East African households is not a wealthy group by international standards. Using the most recent estimates available based on household budget surveys, the average household in the top 10% of consumers lived on roughly US$13,000 per year in Kenya (2005/06) and US$7,500 in Tanzania (2011/12), equal to roughly US$7 per person per day in Kenya and US$4 per person and day in Tanzania (2010 dollars).[28] The share of households in this top decile living in homes with piped, indoor water and electricity was 70% in Kenya, and the share who reported owning a refrigerator was 25% in Kenya in 2005/06 and 28% in Tanzania in 2011.[29] With the caveat that household budget surveys are imperfect instruments for measuring the very top of the income distributions and most likely underestimate top income levels, the same surveys suggest that the average annual household consumption in the top 1% was US$40,000 in Kenya (2005/06) and US$19,000 in Tanzania (2011/12). Taking these estimates at face value suggests that only the top 1-0.5% of East African households would scrape into a British middle class definition.[30]

[26] This is analogous to Kitching's distinction between 'the "objective" structure of class and production relations and the "subjective" structure of consciousness, ideology and political factions', see: Gavin Kitching, *Class and Economic Change in Kenya: The Making of an African Petite-Bourgeoisie* (New Haven: Yale University Press, 1980), p. 455.
[27] Thomas Piketty also uses the top 10% and top 1% cut-off in his study of top incomes, see: Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge, Mass.: Belknap Press, 2014), chap. 8.
[28] Calculated from the povcal net consumption shares and WDI total household consumption estimates in US$ 2010; assuming an average family size of five.
[29] Calculated from: Kenya Integrated Household Budget Survey 2005/06 and Tanzania Household Budget Survey 2011/12.
[30] Comparing it, roughly, to the Great British Class Survey stratifications, see: Mike Savage, Fiona Devine, and others, 'A New Model of Social Class? Findings from the BBC's Great British Class Survey Experiment', *Sociology*, 47.2 (2013), 219–50., Table 6.

A remaining question and weakens therefore, to which we will return, is whether the top 1% is in fact too broad a measure to capture elite dynamics. Perhaps an even narrower 0.1% strata would nuance the story further. Unfortunately there are few sources that allow income disaggregation at such a high level of granularity and it is only possible to make speculative statements about income shares above the 1% mark.

Africa's public sector elite and a European point of reference

Class or social group dynamics in Africa are typically defined in reference to such dynamics in the global north, not least because Marxist and Weberian analyses and predictions were premised on the 19th century European experience. Academics have speculated about how conditions particular to Sub-Saharan Africa, or former colonies in general, would generate a postcolonial 'bourgeoisie' with a different set of interests and characteristics to that which emerged in Europe a century earlier.[31] This dichotomy between middle class development in the Global North versus Global South, however, has probably been overstated. Studies on the origins of the British middle class have stressed the importance of the state both as an employer and regulator of professional labour as early as the 18th century.[32] While it is beyond the scope of this study to quantify the composition of Europe's 18th and 19th century bourgeoisies for comparative purposes, it is possible to say what the contemporary literature predicts about social positions of public sector employees in advanced economies, and therefore, at least for the most recent period, provide a benchmark for the African country cases.

Firstly, it is important to note that public services in wealthier economies tend to be considerably larger than in developing countries, with the UK public sector employing roughly 18% of the working population today compared to roughly 4% in East Africa.[33] In addition to its large size, the European public sector workforce is distinct in educational and gender terms, with a disproportionately large share of college and university graduates in public sector employment (given the comparatively high educational attainment of teachers, nurses and doctors). This skew is more accentuated among women than men.

In the UK in 1995 for instance, public sector employees constituted 27% of economically active workers, but 41% of all economically active degree holders, and 50% of all workers with other forms of higher education, according to the 1995 labour force survey. Women formed a much larger share public sector employees overall, but particularly so amongst the highly educated, with over 60% of higher educated women

[31] See: Nicholas van de Walle, *Barrington Moore in the Tropics: Democracy and the African Middle Class*, Political Economy of Regime Transitions Research Workshop, 2014.
[32] See discussion in: Mike Savage, James Barlow, and others, *Property, Bureaucracy and Culture: Middle-Class Formation in Contemporary Britain* (London: Routledge, 1992), chap. 3.
[33] For Kenya and Tanzania, see Appendix 1, for UK, see: Bank of England, 'Three Centuries of Macroeconomic Data, Version 2.3', 2015 <http://www.bankofengland.co.uk/research/Pages/onebank/threecenturies.aspx>.

in state employment. The same pattern is evident in France, where the 1999 census provides data on employment by sector. It showed that 38% of university degree holders worked for the state, compared to 28% of workers overall, with higher shares among women.

Table 1. United Kingdom 1995: Share of economically active people in public employment by educational attainment (ages 30-60) (n=46,040)[34]

Highest level of education	Share in public employment ALL	Share in public employment MEN	Share in public employment WOMEN	Total number (million)
Degree or equivalent	41%	34%	56%	2.5
Gigher education	50%	28%	67%	1.8
GCE A level or equiv.	19%	15%	30%	4.1
GCSE grade A-C or equiv.	26%	20%	30%	2.8
Other qualification	22%	15%	29%	2.6
No qualification	20%	13%	25%	3.2
Total	**27%**	**20%**	**36%**	**17.1**

Table 2. France 1999: Share of economically active people in public employment by educational attainment (ages 30-60) (n=882,530)[35]

Highest level of education	Share in public employment ALL	Share in public employment MEN	Share in public employment WOMEN	Total number (million)
University	38%	30%	46%	4.1
Secondary	27%	21%	34%	8.0
Primary	28%	25%	31%	3.3
Less than primary	17%	14%	23%	2.2
Total	**28%**	**23%**	**35%**	**17.7**

Wage setting in the public sector also differs from that in the private sector. While most studies of pay find a premium for public sector workers compared to those in the private sector,[36] this premium tends to be largest among low-skilled workers, while salaries are often more compressed among senior civil servants. Many studies have

[34] Calculated from: Northern Ireland Statistics and Research Agency. Central Survey Unit. Office for National Statistics. Social and Vital Statistics Division, 'Quarterly Labour Force Survey, April - June, 1995. [Data Collection]' (UK Data Service., 1995) <http://dx.doi.org/SN: 5876>.
[35] Calculated from: Minnesota Population Center., 'France General Population Census 1999, Integrated Public Use Microdata Series, International: Version 6.3 [Machine-Readable Database].' (University of Minnesota, 2016).
[36] Robert G. Gregory and Jeff Borland, 'Recent Developments in Public Sector Labor Markets', in *Handbook in Labor Economics*, ed. by O. O. Ashenfelter and D. Card, 1st edn (Elsevier, 1999), pp. 3573–3630.

found that institutionalised salary scales in the public sector rather than individual bargaining tend to reduce wage spread and thus inequality.[37]

There are thus several forces to contend with. While its relatively high educational attainment and the possible pay premium for the lower skilled suggests that public sector employees will be skewed towards the top of the distribution, greater wage compression may limit their shares among the very top earners. This is illustrated in Figures 1 and 2, which give the share of public sector employees by wage decile and percentile for the UK in 1995, constructed based on reported hourly wage rate (excluding self-employed workers), using data from the labour force survey. It shows that public sector employees are concentrated at the top of the wage distribution, peaking in the 9th decile at 41% (compared to 11% in the 1st decile). At the very top of the distribution, however, the public sector share is smaller. On a percentile basis public sector employees peak in the 93rd percentile (at 52%), but constitute only around 17% of the 100th percentile.

The levels are somewhat lower on a household rather than worker basis but the pattern is the same. In order to compare the UK results with our findings for Kenya and Tanzania (which are based on a household measure), Figure 1 ranks British households on a total household income basis using data from the 2014/15 family resources survey, and calculates the share of households headed by a public sector employees (head is defined as the household member with the highest income). The shares also spike in the 9th decile although the public sector shares are lower, both because this sample contains self-employed households, and because the high share of women in public employment mean that public sector employees form a lower share of household heads than labour force participants overall.

While there are limits to the comparison, the UK example provides a point of reference to the results from East Africa. It provides a useful reminder that public sector employees around the world are a comparatively high earning segment of the labour force. This alone is not evidence of a middle class excessively beholden to the state.

[37] See for instance: Anthony B. Atkinson, *Inequality: What Can Be Done?* (Cambridge and London: Harvard University Press, 2015); Richard Disney and Jelena Lasusev, *Pay Compression : The Role of Public Sector Monopsony*; J. Fournier and I. Koske, *The Drivers of Labour Earnings Inequality: An Analysis Based on Conditional and Unconditional Quantile Regressions*, *Less Income Inequality and More Growth – Are They Compatible?*, OECD Economics Department Working Papers (Paris, 2012).

Figure 1. United Kingdom 1995: Public sector share of each wage decile (deciles constructed based on hourly wage), excluding self-employed workers (n=9,174)[38]

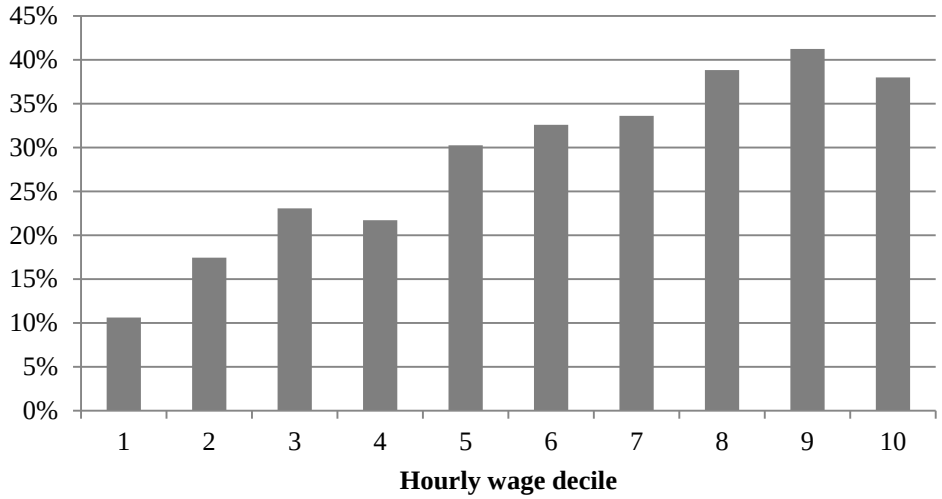
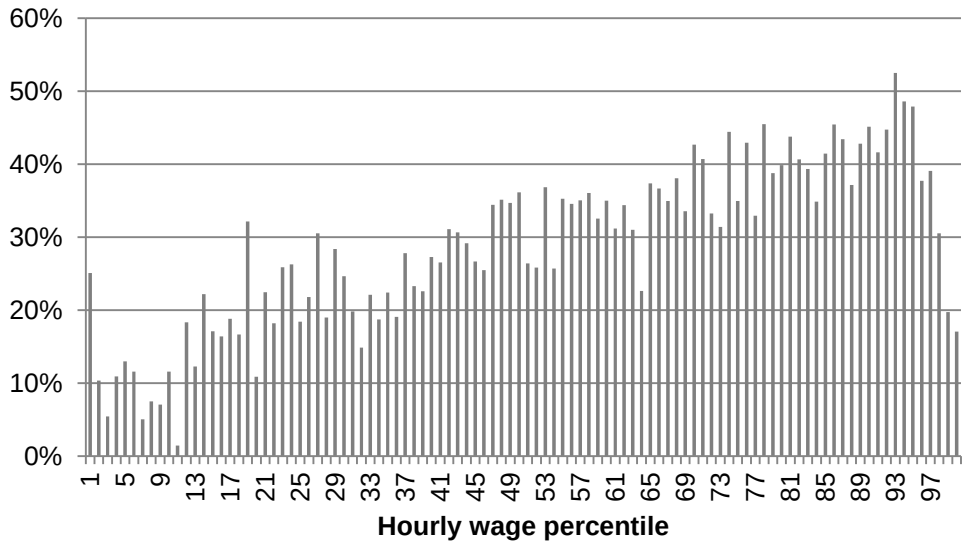
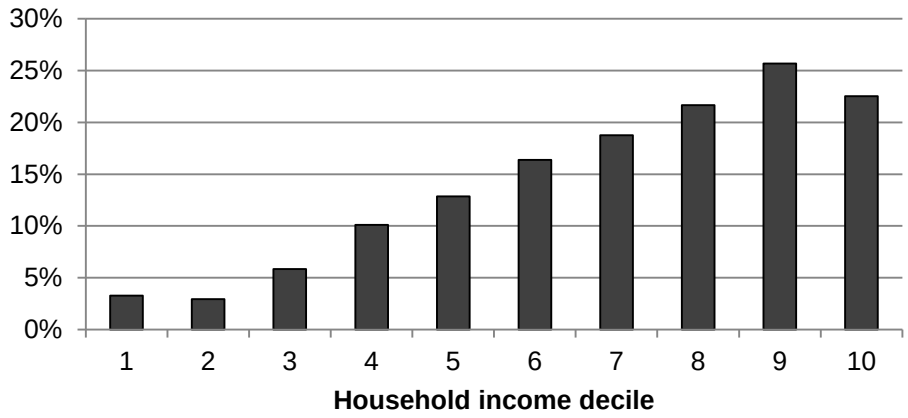


Figure 2. United Kingdom 1995: Public sector share of each wage percentile (percentile constructed based on hourly wage), excluding self-employed workers (n=9,174)



[38] Calculated from: Office for National Statistics. Social and Vital Statistics Division.

Figure 3. United Kingdom 2014/15: Public sector-headed households as a share of each household income decile[39]



Predicting the wage and employment effects on the relative standing of public sector employees

Before examining where public sector employees fell in the East African income distributions, however, it is helpful to consider how salaries and employment in the public sector have performed in aggregate terms. This helps to illuminate the main drivers of the changing social status of members of the public service. As pay and employment policies in both countries have undergone profound shifts since the 1960s, there is good reason to expect that the fortunes of public sector employees would have changed over the postcolonial era.

The late colonial and postcolonial period can be broken into three phases characterised by different public employment policies. In the 1950s and 1960s, the Kenyan and Tanzanian governments sought to raise public sector salaries, particularly for low skilled workers, and initially limited growth in employment in order to create the fiscal space for wage increases. From the late 1960s until the late 1980s the governments reversed these priorities, limiting wage growth in order to expand the size of the service and incorporate more people into the public sector labour market. From the 1990s and on the policy was reversed once more. Recognizing that salaries had fallen excessively, governments sought to limit new job creation again in the interest of raising the salaries of those in employment.

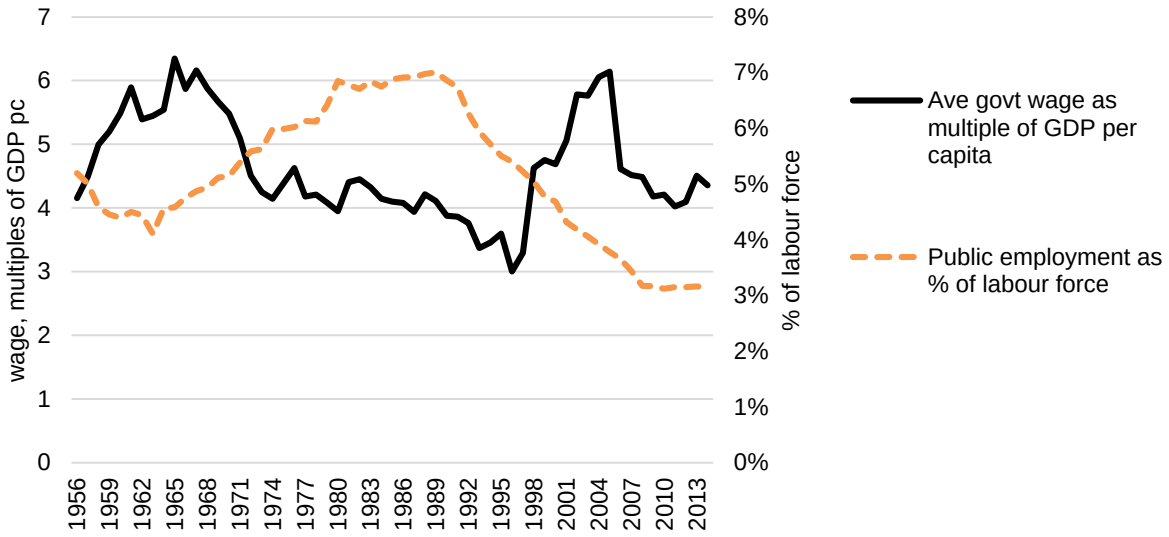
These shifts are illustrated in Figure 4, which traces the average (real) wage in the general government as a multiple of GDP per capita, against the share of the labour force in public employment. These charts illustrate the large oscillations in relative public sector wages, with a large erosion in earnings from the 1970s through 1990s

[39] Calculated from: National Centre for Social Research and Office for National Statistics. Social and Vital Statistics Division Department for Work and Pensions, 'Family Resources Survey, 2014-2015 [Computer File]' (Colchester, Essex: UK Data Archive, 2016) <http://dx.doi.org/10.5255/UKDA-SN-8013-1 >.

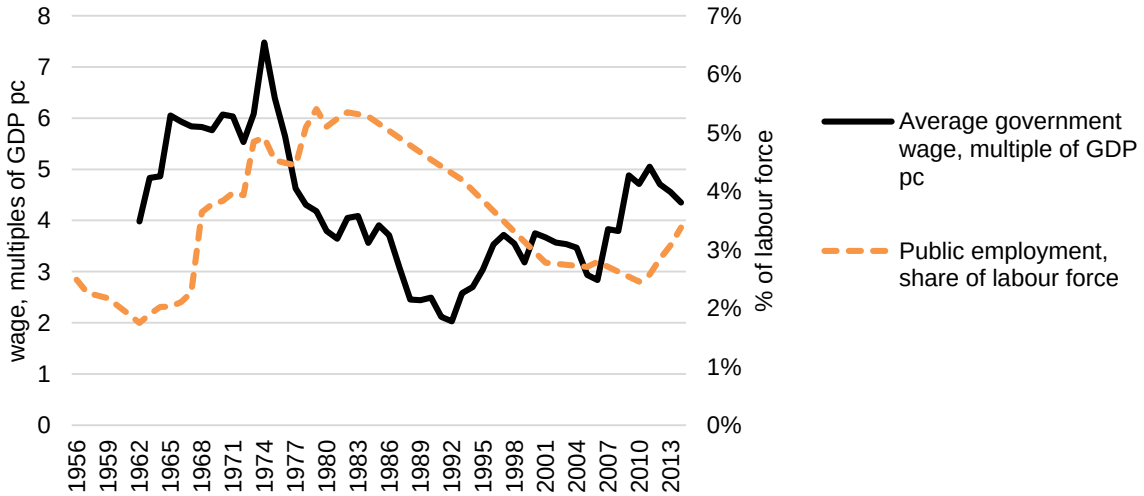
as the size of the public service increased.[40] From peak to trough, average earnings in relation to GDP per capita in Kenya fell by almost 50% and in Tanzania by roughly 70%. Over the same time period the average educational attainment of government employees rose substantially, thus these charts understate the full magnitude of the decline in salaries. From the 1990s on, public servants in both countries saw some recovery in their earnings while the share of the labour force in public employment fell steeply.

Figure 4. Average earnings in the government sector and the public employment share of the labour force (sources: see Appendix 1)

Kenya



Tanzania



These wage declines of the 1970s and 1980s were driven almost entirely by inflation. Several of the big wage shocks coincided with the oil price shocks of the 1970s, early

[40] These wage declines are well documented in the policy literature, see for instance: David L. Lindauer, 'Government Pay and Employment Policies and Economic Performance', in *Rehabilitating Government: Pay and Employment Reform in Africa*, ed. by David L. Lindauer and Barbara Nunberg (Washington D.C.: World Bank, 1994), pp. 17–32.

1980s and 2000s. But although macroeconomic instability and weak budgetary control may have hastened the wage decile, the failure to fully compensate workers for the rising cost of living was in part an active policy decision. Both governments explicitly stated in policy documents and reports that salary growth was not a key priority; a Kenyan government paper from 1967 for instance, emphatically stated that 'creating more jobs for the unemployed must take precedence over increasing the incomes of those already employed.'[41] When it came to salary adjustments moreover, those of lower-paid employees were raised more than those at the top, in an effort to compress the large wage spread within the public service inherited from the colonial era.[42]

After independence both governments instituted a policy architecture for managing wage growth and made frequent policy pronouncements about the government's preferred wage path, while successively curbing the power of labour unions.[43] Tanzania abolished unions in 1964,[44] while in Kenya in 1972 the government made it virtually impossible for workers to strike.[45] The number of man-days lost annually to strikes fell considerably across the region. The Tanzanian government froze public sector salaries between 1975 and 1980 with the explicit attempt of reducing what it perceived to be an urban wage premium.[46] In Kenya a series of tripartite agreements (1964, 1970 and 1979) bound the government and private sector to increase the number of jobs by a set percentage in exchange for wage restraint on the part of trade unions, with the explicit aim of producing jobs for the unemployed.[47] While the actual impact of these agreements has been debated (some argue that it had little real effect on employment),[48] it is a testament to how politically important the government perceived employment generation to be.

By the 1980s, however, this discourse began to change. Policy documents began to emphasise the unsustainable rate of employment growth rather than the state's duty to the unemployed. In 1993 both Kenya and Tanzania initiated donor-supported civil service reform programmes. These programmes were explicitly designed to reduce staffing numbers in order to finance increases in salaries, which both governments

[41] Government of Kenya, *Sessional Paper No. 10 of 1967, Proposals by the Government of Kenya for the Implementation of the Recommendations Contained in the Report of the Public Service Salaries Review Commission*, 1967.
[42] In Kenya for instance, the bottom ranks of the public service saw their base earnings rise at the pace of inflation, while from the top grades earnings were only to be raised by 60% of the inflation rate. See: Republic of Kenya, *Sessional Paper no.10 of 1980 on the Acceptance and Implementation of the Recommendations of the Civil Service Review Committee, 1979/80* (Nairobi, 1980).
[43] Sabot and Knight. The Kenyan Industrial Court and the Tanzanian Permanent Labour Tribunal received guidelines on wage policy from the government and had the power to vet collective bargaining agreements.
[44] Shivji.
[45] Arne Bigsten, *Education and Income Determination in Kenya* (Hampshire and Brookfield: Gower Publishing Company, 1984).
[46] Theodore Valentine, *Government Wage Policy, Wage and Employment Trends, and Economic Instability in Tanzania since Independence*, Economic Research Bureau Paper (Dar es Salaam, 1981).
[47] J. T. Mukui, 'The Politics and Economics of the 1979 Tripartite Agreement in Kenya: A Note', *African Affairs*, 82.329 (1983), 559–63.
[48] Mukui.

and donors agreed had fallen too low.[49] The reforms were reinforced with explicit creditor conditionality, with loans from the IMF and World Bank linked to civil service reform progress. Staff numbers were reduced through a combination of employment freezes, payroll cleaning and removal of inactive workers, voluntary early retirement schemes and redundancies. In tandem all three governments initiated programmes to reform the parastatal sector, with privatization programmes that with time reduced the number of parastatal staff. Although these programmes have been criticised for failing to bring about a meaningful change in staff capacity and civil service effectiveness, in pure numerical terms they largely achieved their objectives. The number of staff fell across the civil services in all three countries, which set against continued rapid population growth resulted in a sharp reduction in the public service share of the labour force. Salaries were successively increased over the course of the 1990s and 2000s, resulting in improvements in real earnings.

These big policy shifts presumably had consequences for both the social standing of public sector employees, but their outcomes are hard to predict ex-ante, as the employment and pay dynamics in both eras pulled in different directions. In the 1960s through 1980s, the relative growth in public sector employment should have increased the share of public servants at the top of the income distribution while the decline in average salaries had the inverse effect; the net impact of these countervailing forces is hard to ascertain. In the 1990s, following the introduction of structural adjustment reforms, it is unclear how a relative wage increase influenced the position of public sector employees in the context of a falling number of such staff. The coming section of this paper thus seeks to understand these dynamics across two distinct time periods: the 1960s through early 1990s, and 1990s to the present.

A further complexity is that official salaries may be a poor guide to the actual earnings of public sector employees. Many have argued that African public sector households augmented low salaries with less transparent forms of rents, such as non-monetary benefits, opportunities for shirking, preferential access to goods and services, or outright corruption. In some of the subsequent sections we will also move beyond reported income, by looking at the consumption and asset wealth of public sector-headed households which provide an alternative lens on the relative privilege or deprivation less sensitive to the underreporting of income.

[49] Petter Langseth, 'Civil Service Reform in Uganda: Lessons Learned', *Public Administration and Development*, 15.1 (1995), 365–90; Graham Teskey and Richard Hooper, *Tanzania Civil Service Reform Programme: Case Study*, 1999; Stephen Mworsho Lorete, *The Kenya Civil Service Reform Programme: Analysis of the Design and Implementation of Retrenchment Policy* (The Hague, 2002).

East Africa's Public Sector Employees and the National Income Distribution

Who constituted the income elite at independence?

For the early independence period income tax statistics provide valuable insight into the incomes at the very top of the East African income distribution. This income tax data from the 1950s and 1960s was recently used by Tony Atkinson in a study on inequality in East Africa.[50] Although only around 1% or less of households were liable to pay income tax, by assuming that these taxpayers constituted the top 1% or 0.1% of all earners he could establish their shares of total income.

These same tax records also provide information on the sources of income within this top elite. The tax schedules disaggregate between employees and individual tax payers (primarily the self-employed), and further between government and 'other' employees (Table 7). These schedules show that government employees constituted roughly a quarter to a third of all tax payers, and by extension of the top 1% income earners in Tanganyika and top 3% in Kenya. These shares are significant, but probably not exceptionally high compared to other regions of the world and in no case did public servants constitute a majority of taxpayers.[51] The government share fell over time as highly paid European colonial officers left the countries and positions were Africanized.

Table 3. Income tax payers by source of income in Kenya, Tanganyika and Uganda, 1959-1964[52]

	1959	1960	1961	1962	1963	1964
KENYA						
Total tax payers	52,922	57,442	52,119	51,739	51,679	52,703
Total tax payers with 'actual' income of £500 or above						*42,208*
Government employees, % of total	31%	30%	27%	28%	27%	24%
Other employees, % of total	44%	42%	45%	45%	46%	46%
Individual tax payers, % of total	24%	27%	28%	27%	27%	30%
TANGANYIKA						
Total tax payers	18,099	18,797	18,069	18,803	18,873	21,036
Total tax payers with 'actual' income of £500 or above						*15,769*
Government employees, % of total	32%	25%	24%	27%	24%	24%
Other employees, % of total	40%	41%	41%	41%	41%	41%
Individual tax payers, % of total	27%	35%	34%	33%	35%	35%

This income elite was heavily dominated by Europeans and Asians, however, and therefore gives limited insight into the African income distribution, which is ultimately the concern of the literature on bureaucratic bourgeoisies. An alternative source from

[50] A B Atkinson, *Top Incomes in East Africa before and after Independence*, 2015.
[51] See earlier discussion of the UK in 1995.
[52] East African Statistical Department, *East African Income Tax Department Annual Report, 1960/61 - 1965/66* (Nairobi).

the same period, the annual Employment and Earnings Survey, does provide income distributions by racial group albeit for salaried formal sector employees only. In combination with the income tax data these can be used to establish the public sector share among high-earning Africans alone. For practical purposes, this analysis is limited to one year, 1964, at the dawn of the independence era. The income tax tables (constructed on a £/annum basis) divide individuals into income groups that use a different set of ranges to the employment survey (which is constructed on a Shs./month basis). To avoid making assumptions about the income distribution within bins, I simply compare Africans earning above £600 with taxpayers reporting income above £500 (this simplification has only a minor impact on the results).

Around the time of independence, Africans constituted 15% of these tax-paying, salaried high income earners in Kenya and 21% in Tanganyika. They were therefore a much smaller share of all African households, constituting roughly the top 0.3% of households in Kenya and 0.1% in Tanganyika. Importantly, however, among Africans alone, public sector employees significantly out-number private sector employees, in contrast to Europeans and Asians where the reverse was true.

We have no way of estimating the African share of self-employed tax payers, however, and can only set very rough upper and lower bounds. The literature on Africanisation suggests that the public sector led the way in Africanizing senior positions, while firms indigenized in the late 1960s with the introduction of rules on firm ownership, board memberships and such.[53] It thus seems reasonable to assume that the African share of high-earning self-employed taxpayers would be lower than their share of high earning employees.[54] I therefore estimate a lower bound scenario, assuming that there were no African self-employed (i.e. individual) taxpayers earning above £500, and an upper bound where the African individual taxpayer share was the same as their share of employee taxpayers.

On the basis of these assumptions, African public sector employees constituted between 50-75% of this income elite, which in turn constituted the top 0.1-0.3% of all households. This gives some quantitative support for the notion of a bureaucratic bourgeoisie – the very top of the African income distribution the public service was indeed dominant.

[53] Donald Rothchild, 'Kenya's Africanization Program: Priorities of Development and Equity', *The American Political Science Review*, 64.3 (1970), 737–53.
[54] In agriculture the situation may be different, but individual taxpayers were concentrated in the trade and services sectors rather than agriculture, which suggests that wealthy farmers were a relatively small share of the income elite.

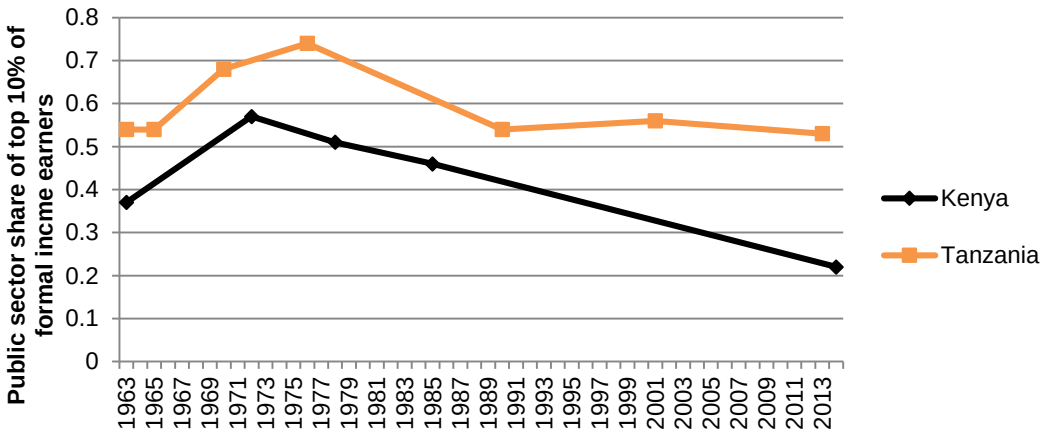
Table 4. African share of taxpayers and by source of income, Kenya and Tanganyika, 1964

	Kenya	Tanganyika
Total employees with 'actual' income above £500	*30,487*	*10,824*
African* employees with salary above £600	4,600	2,246
o/w public sector	3,500	1,717
o/w private sector	1,100	529
Total individual taxpayers with 'actual' income above £500	*11,721*	*4,945*
African individual taxpayers - lower bound	0	0
African individual taxpayers - upper bound	1,769	1,026
Public sector % of earners >£600 - UPPER BOUND	**76%**	**76%**
Public sector % of earners >£600 - LOWER BOUND	**55%**	**52%**
African high income earners as % of total households	*0.3%*	*0.1%*
African high income earners as % of all high income earners	*15%*	*21%*

* for Tanganyika this covers men only.

Since independence these shares appear to have fallen. Using the sporadic data from the Earning and Employment Survey on the wage distribution, Figure 5 calculates the public sector share of the top 10% of formal employees (which corresponds roughly to the top 1-2% of income earners overall). This shows that the public sector share rose briefly in the late 1960s as many Europeans and Asians, who dominated the high income private sector ranks, left East Africa. Starting in the early-mid 1970s however, the public sector share of high income earning employees began to fall. While this exercise only captures the relative ratios among formal sector employees, it seems very likely that the number of wealthy African business and farm-owners also rose in proportion to public sector employees, given the indiginization policies of the 1970s.

Figure 5. Public sector share of top 10% of formal sector employees, Kenya and Tanzania (sources and method: see Appendix 3)



These top slivers of the income distribution constitute a tiny proportion of the population, however, and a very small share of public sector employees overall. Perhaps of even greater political significance is the degree to which the broader,

nascent middle class was dominated by public servants at independence. In the following analysis I therefore estimate the public sector-headed household share within the top income or consumption decile and percentile, using data from household budget surveys.

Establishing public sector position within the national income distribution: Method and data

Household budget surveys provide a valuable source of information about social stratification. The following analysis draws on household surveys from Kenya from 1975, 1994 and 2005/06 and Tanzania from 1969, 1993, 2000/01 and 2011/12. All the surveys from the 1990s and 2000s are available in microdata form and households headed by public servants can be identified within the sample. In these surveys households are ranked on the basis of consumption per adult household member rather than income, as consumption is regarded as a superior measure of living standards in low-income contexts.[55] This has the further advantage that it captures the 'output' of all household income, and is thus less sensitive to potential underreporting of informal earnings and benefits. I choose to normalize household consumption by adult household members (15 and above) rather than per capita or using an adult equivalency scale as the focus of this paper is on the ability of different types of households to generate income rather than living standards per se. Further discussion on the construction of variables and various sensitivity tests to gauge possible biases in the data are discussed in Appendices 4 and 5.

Table 5. Description of surveys used in analysis (further details given in Appendix 4 and 5)

	Source	Abbreviation	Data access	Sample size (# households)	Likely direction of bias
Kenya					
1974/75	Integrated Rural Survey (in addition to other sources)	IRS	Published tables	IRS: 2,300	Under-estimate
1994	Welfare monitoring survey, second round	WMS	Microdata	11,000	Over-estimate
2005/06	Integrated household budget survey	KIHBS	Microdata	13,000	Small under-estimate
Tanzania					
1969	Household budget survey	HBS	Published tables	2,800	Under-estimate
1993	Human Resource Development Survey	HRDS	Microdata	5,000	Over-estimate
2000/01	Household budget survey	HBS	Microdata	22,000	-
2011/12	Household budget survey	HBS	Microdata	10,000	-

[55] See discussion by: James Galbraith, *Inequality and Instability: A Study of the World Economy Just before the Great Crisis* (New York: Oxford University Press, 2012).

The weaker part of this analysis however, are the results from the 1960s and 1970s, which are derived from printed tables that tabulate the number of households by household income groups. The Kenyan 1975 analysis moreover, combines several sources, including the integrated rural survey (which covered roughly 75% of the population), the large farm survey, enumeration of employees, informal sector survey, income tax statistics report and estimates of the pastoral population produced by Collier and Lal (1980), in order to arrive at a national income distribution (see Appendix 4.1).

As these printed tables do not disaggregate the distribution on the basis of sector of employment, I estimate the public sector share by comparing the national distribution with data on the wage distribution in the public sector from the EES. The EES data on the public sector wage distribution, however, is presented on an individual worker basis rather than a household basis. I therefore remove women from the distribution and make the assumption that each male public sector employee is the head of a household and his public sector earnings is the household's only source of income.

This last assumption is particularly problematic as other surveys from the same period show that many public sector households had more than one source of income. In Kenya in particular, the government relaxed the colonial-era rules on ownership of firms and property by civil servants in 1971.[56] It was argued that public servants were well placed to raise the capital and possess the business knowledge necessary to replace foreign business owners, and thereby aid the pace of Africanisation of the private sector – a major political priority of the era. By the mid-1970 critics were already complaining that this reform created a conflict of interest, as civil servants now served 'two masters',[57] and by 1980 another public service commission concluded that many civil servants had multiple income sources.[58] In Tanzania in contrast the 1967 Arusha Declaration included a leadership code that prevented senior and mid-level civil servants from owning companies, real estate or holding more than one salary, but these rules were limited to relatively senior positions and did not prevent land ownership or other household members from working. It is therefore likely that the Tanzanian 1969 and Kenyan 1975 results are lower-bound estimates.

Adding a further downward bias, moreover, is the inclusion of Europeans and Asians in the top income brackets. This has only a marginal impact on the public sector shares of the top decile, as non-Africans were a small share of the overall population. The public sector share of the top 1% however, would be lower if limited to Africans alone as the European and Asian minorities held a disproportionate share of senior private sector roles. This effect will be strongest in the earlier periods when the European and

[56] On the basis of the recommendations of the Ndegwa Commission on the Public Service Structure and Remuneration, see: D. N. Ndegwa, *Report of the Commission of Inquiry: Public Service Structure and Remuneration Commission 1970-71* (Nairobi, 1971).
[57] H. J. Nyamu, *The State of the Civil Service Today: A Critical Appraisal* (Nairobi, 1974).
[58] S. N. Waruhiu, *Report of the Civil Service Review Committee 1979/80* (Nairobi, 1980).

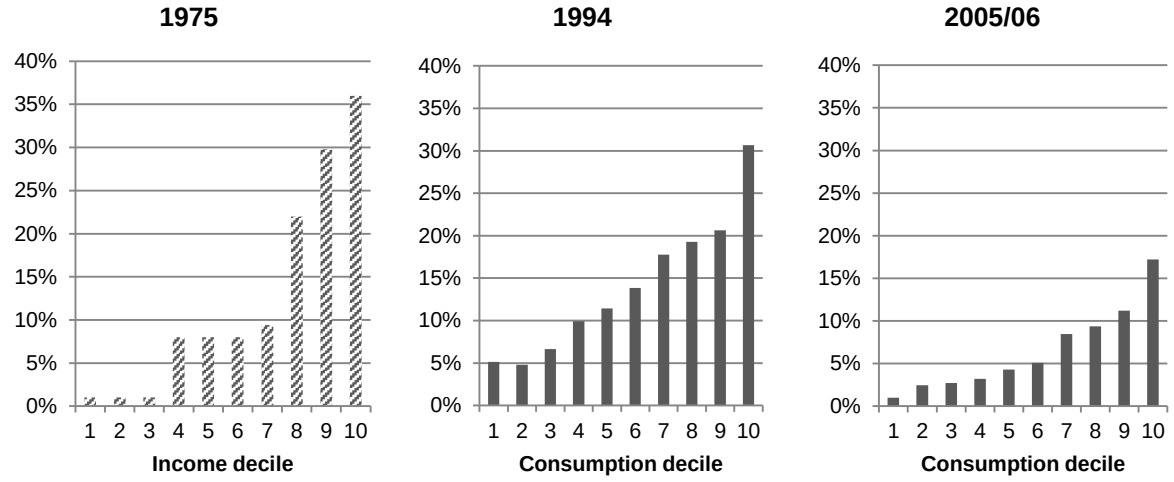
Asian population shares were higher, compounding the likely underestimation of the 1975 and 1969 public sector share estimates.

Kenyan results

Even with a likely underestimation of the 1975 measures however, the Kenyan results show a significant decline in the share of high earning households headed by public sector employees. The position of Kenyan public sector-headed households within the full income distribution are given in Figure 6, where the percentage of public sector-headed households is calculated by income or consumption decile.[59] In the top decile, public sector-headed households fell from 36% in 1975 to 30% in 1994 and 17% in 2005/06. By the 2000s then, the Kenyan public sector-headed household share of the top consumption decile was lower than in the United Kingdom. These results suggest that it was the falling size of Kenya's public service since structural adjustment rather than changes in relative pay that accounted for the main decline in the public sector top income shares, although, as discussed above, the 1975 measure is most likely an under-estimate.

The public sector-headed household distribution also grew more progressive over time; while 32% of public sector-headed households were found in the top decile in 1975, in 1994 the share was only 22%; it then rose again to 26% in 2005/06 as the public sector pay scale was decompressed. In both 1994 and 2005/06 roughly half of all public sector-headed households were in bottom three-quarters of the consumption distribution, which can hardly be considered an especially privileged social strata.

Figure 6. Kenya: public sector-headed households as percentage of consumption decile, 1994 and 2005/06, normalized by number of adults in household



[59] Note that the data for 1975 is a rough recalculation as it builds on underlying wage group data divided into six rather than ten bins. I simply assume a linear distribution of incomes within each wage group, resulting in a flat distribution across deciles 1-3 and 4-6.

Table 10 examines the composition of the top 10% and top 1%, disaggregated by the economic sector of the household head. These decompositions based on economic sector are rough estimates as some of the categories are difficult to distinguish in certain of the surveys, in particular the division between private sector employees and informal sector workers. Furthermore the growing share of retirees, homemakers and students in the top income shares may be distorting the picture as some retirees are presumably former public sector employees, while some students may be supported by their public sector-employed parents. However, assuming that these inactive households are in fact supported by sectoral earnings that match the broader composition of earnings in the income bracket as a whole would at most raise the public sector shares by 1-2%.

With these qualifiers, the data confirms that while the public sector share of the top decile fell, the share of high earning households in the private sector increased, in particular those headed by self-employed business owners, many of whom operated businesses in the informal sector. Agricultural-based households in contrast, fell significantly in share of the top decile.

At the very top of the distribution, among the top 1% instead of the top 10%, this pattern of change was even starker. While there is no obvious change in the public sector share of the top 1% between 1975 and 1994, the share then fell from 31% to 13% between 1994 and 2005/06. The formal private sector share, meanwhile, dropped between 1975 and 1994 and then almost doubled again between 1994 and 2005/06. These formal private sector employees were primarily managers or professionals in the service sector, including a considerable share in the financial sector. A large share of wealthy households were also found in the 'other' category, which comprised retirees and other unclassifiable households. Agricultural households also fell as a share of the top 1%.

Table 6. Kenya: composition of the top income/consumption decile and percentile, by economic sector of the household head[60]

	Top 10%			Top 1%		
Household head sector of employment	1975	1994	2005/06	1975	1994	2005/06
Public	**36%**	**30%**	**17%**	**30%**	**31%**	**13%**
Private employment*	23%	27%	33%	47%	18%	32%
Own business / enterprise	9%	23%	26%	}23%	42%	31%
Agriculture	32%	19%	12%		9%	5%
Other (retirees, students etc.)		1%	12%			19%

*Not necessarily in 'formal' sector; all who report themselves as employees.

[60] Kenya National Bureau of Statistics, *Integrated Household Budget Survey 2005/06* (Nairobi); Kenya National Bureau of Statistics, *Welfare Monitoring Survey 1994, Second Round* (Nairobi). 1975 distribution constructed from the integrated rural survey, annual enumeration of employees, and the income tax annual report; published in: Kenya Central Bureau of Statistics, *Statistical Abstract 1980* (Nairobi); I. Livingstone, *Rural Development Employment and Incomes in Kenya* (Geneva, 1981).

As an alternative to consumption-based measures of socioeconomic standing, it is also possible to use asset ownership and housing characteristics instead of consumption per adult to stratify the population. A potential weakness of consumption based measures of stratifying the population is that it is sensitive to price differences across the country, as well as survey quality and sampling issues (discussed further in Appendix 4). Although less granular than consumption, asset-based measures of living standards therefore have several advantages. Firstly, they are easier to measure accurately. Asking a household member if they own a car or refrigerator gives a result less prone to error than computations of their full consumption patterns over a month or year. Secondly, they are less sensitive to differences in price level across a country (rural-urban), and may say more about actual social status than consumption, particularly where consumption measures are strongly shaped by own-production of food. Lastly, in the Kenyan case, it allows us to make use of the 2009 census, which contained questions about asset ownership but not about income or consumption. The census provides a much larger sample of households and a detailed breakdown of the labour force by sector of work. This is particularly useful for understanding differentiation at the very top of the distribution, for which the relatively small 1994 and 2005/06 samples are less well suited. [61] One drawback of asset and housing quality measures however, is that they react with a lag to changes in income. Households who have already made investments may be able to retain a house with piped water or tiled floors, even if their income falls.

With these caveats in mind I construct an asset index comprising items or housing characteristics that signify a high standard of living, such as ownership of a car, computer, refrigerator, modern stove, TV, and living in a home with electricity, flush toilet, piped water and modern flooring (cement or tiles). For Kenya in 1994 this index relies only on household characteristics – electricity, piped water, flush toilet, flooring and wall materials, as well as cooking fuel/method - as the survey questionnaire did not include questions on asset ownership. Note that roughly half or more of all Kenyan households have none of these characteristics. While this index is a useful way of measuring differences at the top of the distribution, it is unhelpful for distinguishing the poor from the slightly better off. I therefore use this measure solely to examine the composition of the top 10% and 1%.

I construct both a 'naïve' index, which simply sums the number of wealth characteristics that each household has, as well as using a factor analysis technique following Sahn and Stifel and Ncube and Shimles.[62] This technique estimates weights for these different assets/characteristics using factor analysis, which allows the data itself to determine the relative importance of each asset in contributing to some unspecified underlying factor (presumed to be wealth in this case). The two alternative

[61] Anthony B. Atkinson.
[62] David Sahn and David Stifel, 'Poverty Comparisons over Time and across Countries in Africa', *World Development*, 28.12 (2000), 2123–55; Mthuli Ncube and Abebe Shimeles, 'The Making of Middle Class in Africa : Evidence from DHS Data', *The Journal of Development Studies*, 51.2 (2015), 178–93.

index construction methods give very similar results (correlations of between 0.97 and 0.99), and following the more recent literature I choose to report findings using the factor analysis technique. The index is then divided into deciles and percentiles to give a relative wealth measure. Only the 2009 percentile measures are reported, as the results for 1994 and 2005/06 showed considerable volatility in the top percentiles suggesting that the samples are too small and the indicator insufficiently granular to capture differences at the very top of the distribution. In the table below we replicate the disaggregation from Table 6 using asset wealth rather than consumption per adult to identify the top 10% and top 1% of households.

Public sector-headed household and private employee-headed households are a higher share of the top decile when measured on an asset wealth rather than consumption basis, while the share of self-employed stays roughly the same. The share of agricultural households in contrast, is considerably smaller. This may reflect the fact that consumption measures are sensitive to the pricing of consumption of own-produced food, and may be inflating the observed consumption levels in agricultural households through the pricing of own-production (this technique assumes that this food could be sold and converted into other forms of household spending, which may not be the case). Some of the asset or housing characteristic measures may also partial to urban households. A rural, agrarian household is presumably less likely to have piped water, flush toilets or be connected to an electricity grid than an urban dweller with the same level of income.

While this alternative method of stratifying the population suggests a slower rate of change than the consumption method, it does not alter the overall trajectory. While the public sector share of the elite remained relatively steady between 1975 and 1994 (assuming that the 1975 income-based measure is an accurate reflection of asset wealth), it then dropped considerably to 21% in 2005/06 and 18% in 2009. The 2009 census results, which are based on a considerably larger sample (10% of the population) add further confidence to these findings, showing a continued fall in the public sector share of the top decile and percentile.

Table 7. Kenya: composition of the top asset wealth decile and percentile, by economic sector of the household head (1975 measure based on income, see Table 2)

	Top 10%				Top 1%			
Household head sector of employment	***1975***	**1994**	**2005/06**	**2009**	***1975***	**1994**	**2005/06**	**2009**
Public	***36%***	**36%**	**21%**	**18%**	***30%***			**19%**
Private employment*	*23%*	38%	36%	36%	*47%*			44%
Own business / enterprise	*9%*	22%	26%	33%	*}23%*			30%
Agriculture	*32%*	3%	4%	2%				0.5%
Other (retirees, students etc.)		1%	13%	10%				7%

*Not necessarily in 'formal' sector; all who report themselves as employees.

Given the significant relative decline in public sector salaries in the 1990s, it is perhaps surprising that the decline in the public sector share of the top decile was not larger between 1975 and 1994. In 1994 the Kenyan economy had been performing poorly for several years with inflation in double digits and formal sector wages were at their nadir.[63] Part of the answer to the relative resilience of public sector-headed households appears to lie in income diversification. As already mentioned, public sector headed households often had more than one source of income. [64] While the earlier surveys provided only indirect evidence of this, the surveys from the 1990s and 2000s allow us to quantify the effects of secondary income sources. In 1994 the median public sector-headed household earned 57% of household income from its public sector salary and the other 43% from farming, business profits or the salaries of other household members.[65] Although the 2005/06 income data is less reliable, it appears that these levels rose again as salaries recovered (and agricultural prices slumped) in the mid-2000s. In 2005/06 the median public sector-headed household earned 80% from the household head's primary salary and 20% from other sources.[66]

Table 8 examines these secondary income sources. It measures the share of public sector-headed households that report additional incomes by income stream. As a control group, these shares are also reported for households headed by a private (formal) sector employee. Close to 60% of public sector headed households in 1994 had either a business or farm that generated income beyond their salaries or wages, and 49% had at least one additional wage income earner. These shares were higher among public sector-headed households than among private sector-headed households, although this may partially be an artefact of more urban-based households in the private sector, which limited agricultural opportunities. Either way, it appears that formal sector households were able to augment their salaries by straddling different economic sectors, including employment, farming and business.

In 2005/06 the share of households with a farm or enterprise income had fallen to just below 50% among public sector-headed households and 24% among private sector-headed households (although the formal private sector measure may not be perfectly consistent across surveys). The share of households with a second salary or wage earner had also fallen quite considerably. While not conclusive evidence as we have no data points for the pre-crisis era, the higher reliance on secondary income sources in the 1990s compared to the 2000s is consistent with the idea that households diversified incomes in response to the economic crisis of the 1980s and 1990s, and concentrated their efforts once more once salaries began to recover.

[63] International Monetary Fund, *Kenya: Recent Economic Developments* (Washington D.C., 1995).
[64] Also discussed by: Waruhiu; Mwangi wa Githinji, *Ten Millionaries and Ten Million Beggars: A Study of Income Distribution and Development in Kenya* (Hampshire and Burlington: Ashgate Publishing Limited, 2000); Neubert.
[65] Author's calculations based on WMS 1994.
[66] Author's calculations based on KIHBS 2005/06. However, the agricultural and business income data appears to be underreported.

Table 8. Kenya: Percentage of public and private sector-headed households who have secondary incomes, by source (calculated from 1994 WMS and 2005/06 KIHBS)

	1994		2005/06	
Sources of secondary income	**Public**	**Private**	**Public**	**Private**
Operate business	31%	27%	19%	13%
Agriculture or livestock income	40%	28%	39%	17%
Spouse/other family member in employment	49%	45%	32%	25%
Have either business, farm or livestock that is earning income	*58%*	*46%*	*49%*	*24%*

Tanzanian results

The Tanzanian results tell a similar story of change to that of Kenya. Figure 6 shows where public sector employees fell within the entire Tanzanian income or consumption distribution in each year.[67] Because of its large parastatal sector, public employment has been broken down into a general government and parastatal employment in these charts. The results show that public sector-headed households fell from roughly a quarter of the top decile in 1969 to 16% in 2011/12. As in the Kenyan case, most of the reduction took place after structural adjustment, when the number of public sector jobs fell. In the 2000s in particular, the government's divestures from the comparatively high-paying parastatal sector explain most of the reduction.

The broader distribution of public sector-headed households also shows considerable change. In 1969 nearly all public sector-headed households had incomes that put them in the top two deciles of income earners. By 1993 however, the size of the public sector had grown, and although public servants remained roughly a quarter of the top decile, they constituted a relatively large share of households at the middle of the income distribution. Government and parastatal employees differ in this regard however, with parastatal-headed households concentrated towards the top of the distribution suggesting that the parastatal sector had protected its workers better throughout the two decades of wage erosion.[68] By the 2000s Tanzanian public sector salaries had increased significantly and by the end of the decade were close to their 1960s level, while the level of employment had fallen as the government instituted hiring freezes and divested from the parastatal sector. Public sector-headed households became more concentrated at the top of the distribution once more.

[67] Note that the 1969 distribution is estimated on the basis of five uneven income brackets, and we therefore simply assume an even distribution across the bottom 7 deciles.
[68] Other support for this argument, see: David L Lindauer and Richard H Sabot, 'The Public/private Wage Differential in a Poor Urban Economy', *Journal of Development Economics*, 12 (1983), 137.

Figure 7. Tanzania: Share of public sector headed households by income/consumption decile, normalized by adults in household* (Sources: see Appendix 5.)

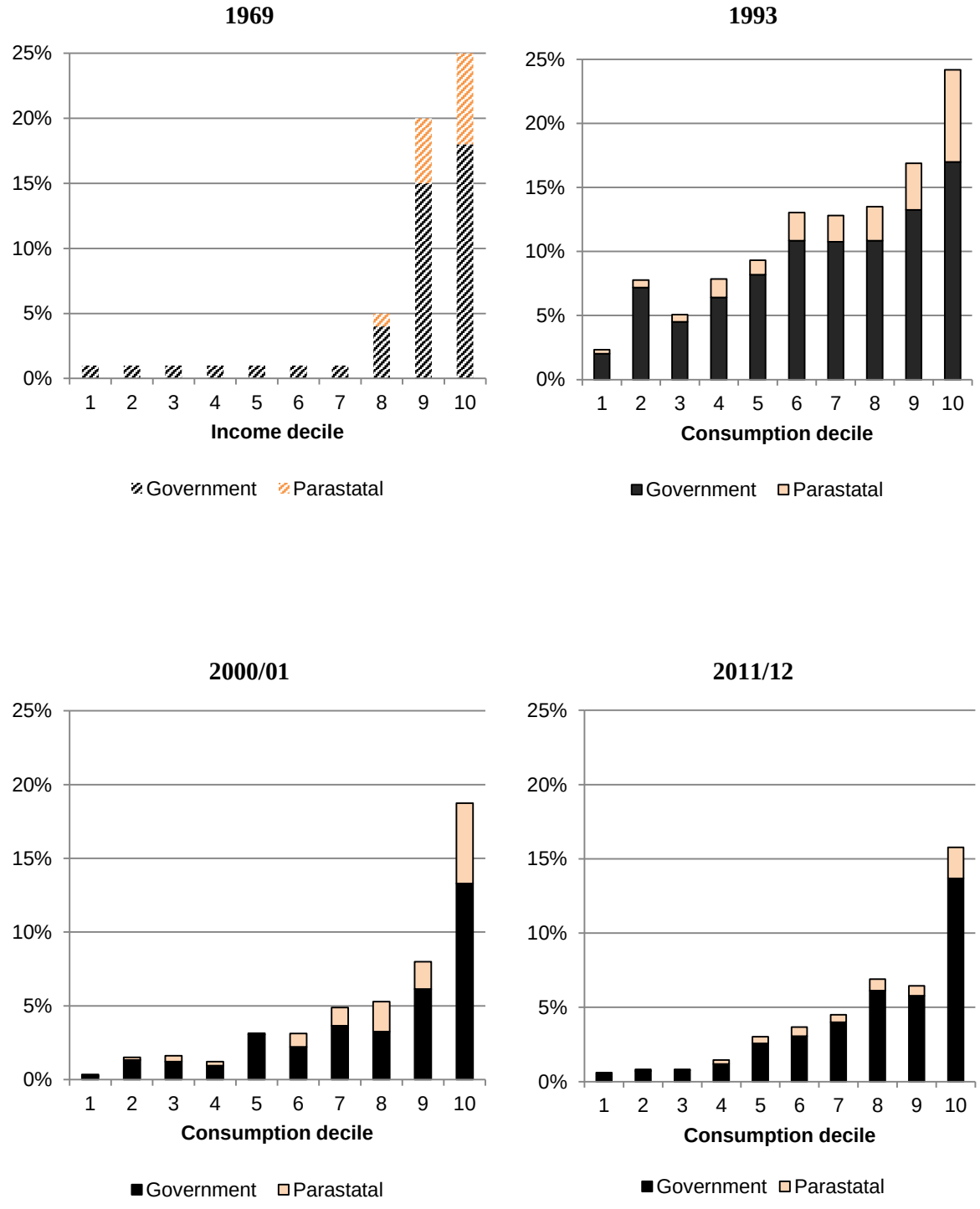


Table 9 examine the composition of the top 10% and 1% on the basis of the household head's stated sector of work.[69] As the public sector share of the top decile fell over the 1990s and 2000s the private sector appears to have gained in size, both among

[69] As in the Kenyan case, these categories are quite roughly defined and various judgement calls had to be made in order to harmonize categories across surveys.

employees and business-owners. As in Kenya, agricultural households fell in share, at least over the course of the 2000s.

In the top 1%, as opposed to the top 10%, public sector-headed households were a larger share throughout the period, but fell from roughly 42% in 1969 to 21% in 2001, before recovering marginally to 25% in 2011/12, presumably on account of rising public sector salaries. Business owners constitute the largest and most rapidly growing share of the top 1%, while agriculturalists fell in share. Private formal sector employee households remained a relatively steady 20% of the to 1% throughout the postcolonial era.

Table 9. Tanzania: composition of the top income/consumption decile and percentile, by economic sector of the household head [70]

	Top 10%				Top 1%			
Main activity of household head	***1969***	**1993**	**2001**	**2011/12**	***1969***	**1993**	**2001**	**2011/12**
Public	**25%**	**24%**	**17%**	**14%**	**42%**	**36%**	**21%**	**25%**
Government	*18%*	*17%*	*13%*	*12%*	*28%*	*21%*	*8%*	*16%*
Parastatal	*7%*	*7%*	*5%*	*2%*	*14%*	*15%*	*13%*	*9%*
Private employment*	14%	13%	19%	27%	24%	21%	20%	22%
Informal sector / business	}61%	30%	24%	36%	}34%	30%	35%	42%
Agriculture (or fishing)		30%	33%	21%		13%	19%	9%
Other (retirees, students etc.)		3%	5%	3%		4%		3%

Using the same methods as in the Kenyan analysis, asset ownership and housing characteristics are used as an alternative means of ranking households (results reported in Table 10). Using an asset index rather than household consumption to stratify households raises the share of public sector-headed households in both the top 10% and top 1%, but does not alter the basic story of change. Between 1993 and 2011/12 the public sector share of the top decile fell considerably, while the share of the top 1% shows a more modest reduction. As in Kenya, stratifying households by asset wealth significantly reduces the number of agricultural households in the top strata.

[70] Tanzania National Bureau of Statistics. *1969 Household Budget Survey, Volume 1* (Dar es Salaam, 1972); Tanzania Bureau of Statistics, *Survey of Employment and Earnings 1969* (Dar es Salaam, 1969); University of Dar es Salaam, *Tanzania Human Resource Development Survey 1993* (Dar es Salaam); Tanzania National Bureau of Statistics, *Household Budget Survey 2000/01 & Household Budget Survey 2011/12,* (Dar es Salaam).

Table 10. Tanzania: composition of the top asset wealth decile and percentile, by economic sector of the household head [71]

	Top 10%				Top 1%			
Main activity of household head	***1969***	**1993**	**2001**	**2011/12**	***1969***	**1993**	**2001**	**2011/12**
Public	***25%***	**31%**	**19%**	**19%**	***42%***			**37%**
Government	*18%*	*20%*	*12%*	*16%*	*28%*			*26%*
Parastatal	*7%*	*11%*	*7%*	*3%*	*14%*			*11%*
Private employment*	*14%*	18%	28%	25%	*24%*			22%
Informal sector / business		32%	33%	43%				34%
Agriculture (or fishing)	*}61%*	13%	13%	6%	*}34%*			2%
Other (retirees, students etc.)		6%	7%	7%				6%

As in Kenya, the formal sector income declines in Tanzania during the 1970s through early 1990s were partially off-set by household diversification of incomes. In 1993 the vast majority (67%) of Tanzanian public sector-headed households also had some income or own-production of food from farming, livestock or fishing. Very few, however, reported income from a business. Secondary income sources remained important in the 2000s, although the share with agricultural incomes dropped significantly. In 2000/01 roughly 53% of public sector-headed households had additional income from farming or business activities and 27% had a spouse or child in paid employment. Somewhat unexpectedly the share of public sector-headed households with secondary incomes rose modestly between 2000/01 and 2011/12 despite the continued recovery in public sector earnings. This may be a result of the falling share of parastatal employees in public employment, who were less likely to own farms than their general government counterparts. Unlike in Kenya though, there is no clear evidence that public sector household concentrated their efforts once earnings began to recover.

Table 11. Tanzania: Public and private sector-headed household shares with secondary incomes, by income source, 2000/01 and 2011/12 (Sources: 2000/01 and 2011/12 HBS, see Appendix 5.)

Additional income source beyond primary employment earnings	**1993**		**2000/01**		**2011/12**	
	Public	**Private**	**Public**	**Private**	**Public**	**Private**
Business/self-employment income	4%	4%	26%	33%	26%	22%
Agricultural or fishing income	67%	52%	39%	24%	44%	20%
Spouse/other family member has employment income	N/A	N/A	27%	23%	27%	22%
Have either business or farm that is generating income	**69%**	**55%**	**53%**	**46%**	**58%**	**38%**

[71] University of Dar es Salaam, *Tanzania Human Resource Development Survey 1993* (Dar es Salaam); Tanzania National Bureau of Statistics, *Household Budget Survey 2000/01 & Household Budget Survey 2011/12,* (Dar es Salaam).

The regional distribution of public sector employment

In both Kenya and Tanzania the wealthy strata of society are concentrated in the urban areas, and particularly in the capital cities. The data suggests that 66% of the Kenyan top 1% of households (based on asset wealth) live in Nairobi (and another 7% in Mombasa) in 2009 and 59% of the Tanzanian top 1% in Dar es Salaam (2011/12). The declining public sector share in the top percentile is thus largely a function of more comparatively wealthy private sector-headed households in the capital cities. This begs a further question – does the declining share of public sector employment have a distinct geographic pattern? Does the public sector's relative importance differ in rural versus urban areas? To address this question it is first necessary to examine how public sector jobs are distributed geographically, and how this distribution changed over time.

The colonial era left postcolonial states with a geographically skewed pattern of public spending, particularly so is in settler colonies such as Kenya. European and Asian state and private sector employees were disproportionately based in Nairobi, Mombasa and Dar es Salaam. In Kenya in 1956, 56% of all formal sector salaries and wages were earned in Nairobi or Mombasa.[72] In 1972 (the first year for which sectorally disaggregated data is available), 23% of all public sector employees were found in Nairobi although the city was home to 5% of the Kenyan population.[73] In Tanzania in 1965, 19% of public servants were based in Dar es Salaam which was home to only 3% of the population. Even outside the main cities, colonial government spending had been influenced by the uneven penetration of missionaries and an uneven distribution of colonial investments, which skewed the distribution of the public sector jobs.[74]

Since the colonial period therefore, as rural-urban migration increased and social services were expanded across each respective country, public employment has in fact grown more equitable. The geographic inequality in public sector employment can be measured by calculating the number of public sector employees per capita by district or region and examining the coefficient of variation across them. For Kenya a geographic breakdown of formal sector employment by Kenya's 32 districts is available from 1972, although a disaggregation by sector (public/private) and district is only available for a smaller subset of years. The data from the employment and earnings surveys is complemented with data from the 1994 household survey and

[72] 42% of total formal earnings accrued to employees in Nairobi and 14% in Mombasa. Statistical abstract 1956.
[73] Earliest year for which data is available. Kenya Statistical Abstract 1972.
[74] There is a large literature on the economic geography of colonialism, for instance that by Nathan Nunn on the links between missionary penetration and schooling Nathan Nunn, 'Religious Conversion in Colonial Africa', *American Economic Review*, 100.2 (2010), 147–52; Nathan Nunn, 'Gender and Missionary Influence in Colonial Africa', *Africa`s Development in Historical Perspective*, 2014, 489–512.

2009 census. For Tanzania, data for the private and government sector[75] is available from the Employment and Earnings Surveys between 1965-1980, and from the 1993, 2000/01 and 2011/12 household surveys, broken down by mainland Tanzania's 20 regions. Note that district and region boundaries have undergone some changes; the method for harmonizing geographic areas is outlined in Appendix 2.

As shown in Figure 9, public employment became more equitably distributed geographically over time in both countries. In Kenya the coefficient of variation of public employment density across districts fell from close to 1 to 0.4 between 1972 and 1994 and in Tanzania from 1.1 to 0.4 (albeit with some fluctuations that may reflect data quality problems). This dynamic was heavily influenced by the declining exceptionalism of Nairobi and Mombasa in Kenya, and Dar es Salaam in Tanzania. As Table 15 shows, as public employment grew, public employment growth was more rapid outside the capital city than inside it, reflected in the falling share of public sector employees resident in the capital. Another important factor was the rapid migration into the capital cities (see rising population share), which raised the share of the population served by the capital cities public sector employees.

As a result the public employment share of the labour force fell in both capital cities. A rough estimate of the share of Nairobi households headed by a public sector employee suggests a fall from roughly 35-40% in the 1970s,[76] to 23% by 1994, and 8% by 2009.[77] In Dar es Salaam the public sector share fell from roughly 20% in 1970 to 13% in 2000/01.[78] The fall in public sector-headed households in the urban areas was also accentuated by a growing share of women in public employment, who are more likely to be classified as the spouse rather than head of the household. In Nairobi for instance, the share of public sector employees who were the heads of their household fell from 77% to 62% between 1992 and 2009.[79]

[75] The early surveys count parastatal employment (excl. EAC parastatals) as part of the 'enterprise' sector. The government sector denotes the central and local government and former EAC functions.
[76] Calculated from EES data, assuming a household size of 4.
[77] 1994 WMS and 2009 housing and population census
[78] 1970 estimate based on EES, 2000/01 Household Budget Survey.
[79] 1992 WMS and 2009 housing and population census

Figure 8. Coefficient of variation – public/government employment to population ratio, by district/region (see Appendix 2 for method and sources)

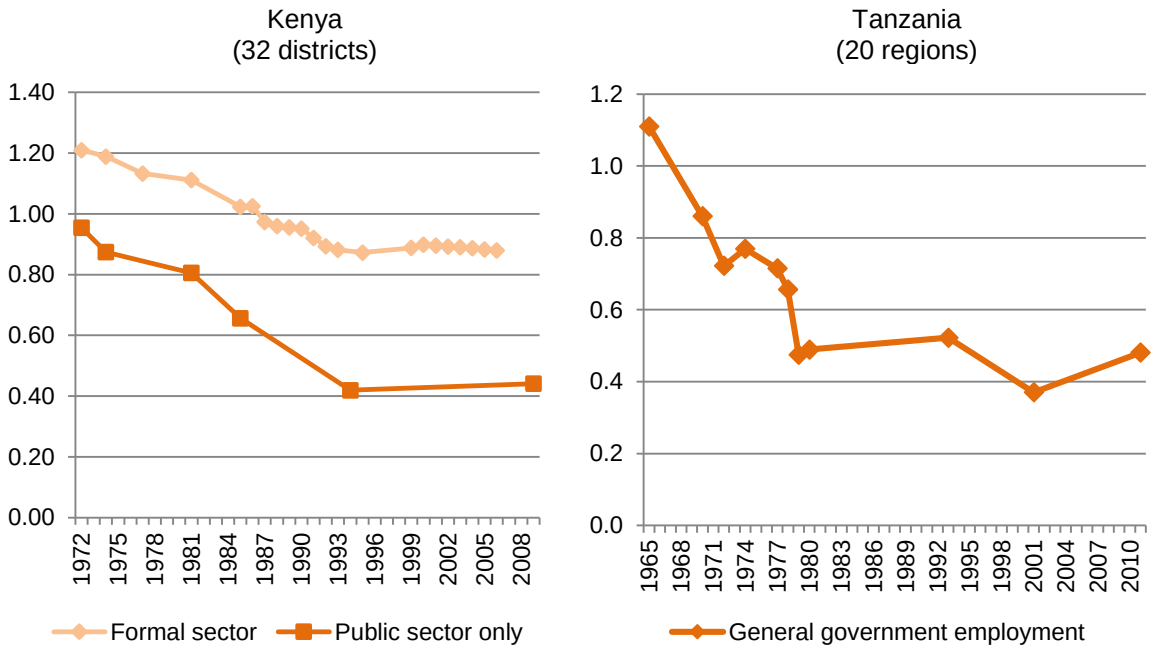


Table 12. Share of public sector employees resident in the capital cities (closest year available to benchmarks)

		c.1970	c.1980	c.1990	c.2000
Nairobi (Kenya)	Population share	5%	6%	7%	8%
	Public employment share	23%	24%	15%	17%
Dar es Salaam (Tanzania)	Population share	4%	5%	7%	7%
	Government emp share	18%	16%	10%	13%

Sources: Kenya 1972 and 1982 Statistical Abstracts, 1994 WMS and 2009 Housing and Population Census; Tanzania 1970 and 1980 Enumeration of Employees Surveys, 1993 HRDS and 2000/01 HBS (note government rather than public sector share in the Tanzanian case).

Given the declining importance of public sector employment in the capital cities relative to the more peripheral parts of the country, has the declining public sector elite share varied by locality? Using the asset wealth index (as it allows us to make use of the Kenyan 2009 census), the tables below calculate the public sector share of the top wealth decile for rural and urban areas separately, and the capital city alone. Note that these results will not tally with the earlier decile shares, as the decile thresholds will vary across these localities (the cut-off into the top decile among residents in the capital cities is far higher than in the rural areas).

The Kenyan results suggest a steeper decline in the public sector shares in the capital city, from roughly 40% in 1994 to 17% in 2009, compared to a fall from 26% to 15% in the rural areas, and 41% to 20% in the urban areas in total. The Tanzanian trends are more ambiguous, and the 1993 results should be treated with caution given the small samples, but suggest extremely high public sector employment levels in Dar es

Salaam's highest wealth bracket in 1993 – 57% - and a sizeable fall since. The decline in the urban areas excluding Dar es Salaam however, was lower than in the rural areas.

This disaggregation sheds further light on the reconfiguration of East Africa's elites. Within the capital cities public servants were a larger share of the middle and upper strata in the first decades of independence than in the country at large. In these localities the public sector share of the top decile has declined more rapidly than in the smaller towns and rural areas. In the capital cities then, if less so in the more peripheral parts of each country, the 'middle class' reliance on public employment has fallen very markedly.

Table 13. Kenya: public sector share of the top decile by asset wealth, by urban/rural locality

	Rural		Urban		Nairobi	
	1994	2009	1994	2009	1994	2009
Public sector share of top decile (asset wealth)	26%	15%	41%	20%	40%	17%
Percentage decline	*42%*		*51%*		*58%*	

Sources: Calculated from the Kenya 1994 WMS and 2009 Housing and population census

Table 14. Tanzania: public sector share of the top decile by asset wealth, by urban/rural locality

	Rural			Urban			Dar es Salaam		
	1993	2000	2011/12	1993	2000	2011/12	1993	2000	2011/12
Public sector share of top decile (asset wealth)	19%	16%	12%	37%	39%	30%	57%	40%	33%
Percentage decline (1993-2011)	*36%*			*19%*			*42%*		

Sources: Calculated from Tanzania 1993 HRDS and 2000 and 2011/12 Household Budget Surveys

Conclusion

Many scholars of African postcolonial history have ascribed an important political and economic role to African public sector employees. Whether they are thought to be rentiers or political clients, public sector employees are associated with undue privilege, and their disproportionate share of Africa's middle and upper classes is thought to have had negative economic and political consequences for the continent.

An analysis of the income tax records from the early 1960s and available household survey data from the 1960s and 1970s from Kenya and Tanzania shows that among Africans public servants were indeed a large share of top income earners. Among the top 0.1% - to 0.5% they comprised between a half and three-quarters of all income earners. Within the broader distribution their shares were lower but still significant,

comprising roughly a quarter of households in the top decile in Tanzania in 1969 and just over a third in Kenya (1975).

But the fate of public sector employees in the decades following independence reveals a more complicated story. Public sector employees saw a steep decline in real wages between the 1970s and early 1990s despite their rapidly increasing educational attainment. In Kenya and Tanzania average real earnings in the public sector declined by 70-80% between the 1970s and early 1990s, falling from 6 times GDP per capita to just above 3 times in Kenya, and from 7 times GDP per capita to 2 times in Tanzania. Starting in the 1990s in moreover, both governments rationalised their public services which significantly reduced the share of the labour force in public employment. If public sector employees truly constituted an influential interest group, it is hard to see how the Kenyan and Tanzanian governments could have succeeded in reducing real wages by such amounts. While some public sector employees may well have gained from the economic uncertainties of the 1970s and 1980s by capitalising on the price distortions and income opacity, the majority would surely have favoured wage stability and slower employment growth.

As a result, the share of public sector employees in the top income or consumption deciles roughly halved. While public sector-headed households constituted in the order of 36% of households in the top income decile in Kenya in 1975, this share had dropped to 30% by 1994 and 17% by 2005/06. The Tanzanian public sector share of the top 10% of income earners started lower, falling from an estimated 25% in 1969 to 14% in 2011/12. In tandem the public sector share of the top percentile fell by a similar magnitude. These declines were sharper in the capital cities than in rural and more peripheral regions, suggesting that the growing urban metropolises have undergone the most extensive structural change.

In both Kenya and Tanzania the share of public sector-headed households in the top 10% is today lower than in the United Kingdom. In the UK the public sector shares tapered off in the top percentiles however, a pattern that is less stark in Africa. In Kenya the public sector share appears to taper off marginally in the top percentiles, while in Tanzania the very top of the income distribution remains more strongly dominated by public servants.

Despite the large fall in public sector salaries in the 1970s and 1980s it appears that the structural adjustment reforms of the 1990s that had the biggest impact on the public sector share of top incomes, with most of the decline in both the top decile and percentile happening between the early 1990s and late 2000s (although the estimates from the 1960s and 1970s come with a large margin of error). It appears that in the 1980s and early 1990s, at least some public sector-headed households successfully off-set the effects of falling base salaries by relying on multiple income sources, including farming, small enterprises and the wage earnings of other household members. This raises further questions about the beholdeness of East Africa's public servants. With a relatively large share of their household income derived from sources

other than their government wage, their economic interests may not in fact be those of a salaried class.[80]

This story of change provides a cautiously optimistic tale. Both at the very top and among the broader 'middle class', those households at the fore of the income distribution during East Africa's economic recovery in the 2000s are primarily households in the private sector. Compared to the first two decades of independence, a larger share of the relatively prosperous Kenyan and Tanzanians are today business owners and employees at banks and in other service jobs, suggesting that Frantz Fanon's derided 'bourgeoisie of the civil service' may no longer be a considerable social force.

How these trends will play out in the future, however, are far from certain. Kenya's 2010 decision to devolve power to county governments has raised concerns that local governments are beginning to expand the level of public employment as well as creating a new tier of high-paying political posts at local level.[81] This may boost the importance of public sector jobs in county capitals, but could also trigger future wage deciles. It may also lead to a continued divergence between the employment distribution in Nairobi and Mombasa and those in the peripheral towns. Economic setbacks could also slow the ongoing transition, if falling demand reduced the growth of high-paying private sector jobs.

Nonetheless, this paper has underscored that African economies have been far from static over the past half-century and are unlikely to become so in the future. Political economy interpretations of the continents postcolonial performance need to take greater cognizance of the dramatic changes to the structure of household earnings in the decades since independence, and identify the winners and losers of these shifts in different eras. Public sector employment was an important source of income for comparatively well-off Kenyans and Tanzanians at independence, but the political and social status of public sector employees ebbed and flowed over the following decades.

[80] This argument has also been made by Neubert, 2016.
[81] Michelle D'Arcy and Agnes Cornell, 'Devolution and Corruption in Kenya: Everyone's Turn to Eat?', *African Affairs*, 115.459 (2016), 246–73.

Appendix 1: Data sources for Figure 4

Employment and earnings

Kenya	Annual Enumeration of Employees Survey, tables published in: • 1946-1960: Kenya Statistical Abstracts, 1955 - 1962 • 1961–1990: Kenya: Economic Survey, 1960 – 1990 • 1991-2010: Kenya Statistical Abstracts, 1991-2010
Tanzania*	Survey of Employment and Earnings • 1961 – 1984: Bureau of Statistics Tanzania, Survey of employment and earnings Payroll records of government employment, cited in: • 1981-2010: World Bank, Tanzania Public Expenditure Reviews, 1989, 1994, 1996, 2000, 2004 and 2010 Total government personnel expenditure • 1981 – 2010: IMF Recent Economic Developments and Article IV Staff Monitoring Reports

*Note: Tanzania average government wage series constructed from average earnings for male citizen in the government services sector for period 1960 – 1978; after that the average is based on the total government wage bill divided by general government employment (imputed for missing years).

Cost of living indices

Kenya	• 1948 – 1960: Kenya: Statistical Abstract (Nairobi cost of living index) • 1961 – 2012: World Development Indicators (Inflation, Consumer prices)
Tanzania	• 1947 – 1965: Monthly statistical bulletin (Dar es Salaam wage earners index of consumer prices) • 1965 – 2012: World Development Indicators (Consumer price index)

GDP

- World Bank (2014), World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators
- Pre-1960 (Kenya): PENN World Tables: Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2013), "The Next Generation of the Penn World Table" www.ggdc.net/pwt

Population*

- Pre-1960: Ewout Frankema and Morten Jerven, 'Writing History Backwards or Sideways: Towards a Consensus on African Population, 1850-Present', *Economic History Review*, 67.4 (2014), 907–31.
- 1960- Present: World Bank (2014), World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators

*Note: labour force estimated as a fixed percentage of the working age population (15-64), based on recent estimates of labour force participation available in World Development Indicators.

Appendix 2: Regional distribution of earnings: Figure 8

Figure 8 was constructed by using regionally disaggregated data on the population and the total number of public/formal sector employees. The public/government employee to population ratio and formal sector employee to population ratio was calculated for each district in Kenya and Tanzania and each region in Tanzania. I then calculate the coefficient of variation across these data points by year and plot how the CoV changed over time. Note that in the Tanzanian the measure only includes general government employees (i.e., it excludes the parastatal sector).

The table below provides detail on the data sources used for the analysis.

Kenya	**Formal sector employment** 1972 – 2005: EES **Public sector employment** 1972 – 1985: EES 1994: WMS 2009: Census **Total population** Censuses from 1969, 1979, 1989, 1999, 2009 (population assumed to grow linearly between census years), 1994 data point using estimated district population from survey.
Tanzania	**Government and formal sector employment** 1965 – 1980: EES; 1993 human resource development survey, 2000/01 and 2011/12 household budget surveys **Total population** Censuses from 1967, 1978, 1988. For data points using household surveys, regional population estimates taken from the surveys.

The subnational boundaries in all three countries have changed over time. The data has been constructed on the basis of the 1970s boarders, see description below.

Kenya

To keep the sample constant over time, the original 41 Kenyan district divisions of the 1970s are used in this paper, clustered into 8 provinces. Kenya's administrative divisions have undergone considerable change since independence. Under President Moi and President Kibaki the number of districts in Kenya was increased, and as a result the censuses contain an increasing number of districts (69 in 1999, 158 in 2009). However, a High Court ruling in 2009 deemed 210 of the then existing 256 districts illegal, and reverted the administrative structure back to the 46 districts and Nairobi as set out in the Districts and Provinces Act of 1992. When the 2010 Constitution came into effect in 2013, these districts were converted into 47 counties, which form the basis for the devolution envisaged under the new constitution.

Thankfully, new Kenyan districts were carved out of single old districts, making it a relatively straightforward task to merge new districts into old ones. The mapping below shows how any new district divisions have been merged into the original 1972 list.

	Master list	New districts mapped onto old
110	Nairobi	
205	Kirinyaga	
208	Kiambu	Thinka
220	Nyandaura	
221	Nyeri	
222	Muranga	Maragua

301	Mombasa	
303	Kwale	
306	Kilifi	Malindi
309	Tana River	
311	Lamu	
320	Taita Taveta	
401	Marsabit	Moyale
405	Isiolo	
415	Embu	Mbeere
421	Machakos	Makueni
430	Kitui	Mwingi
431	Meru	Meru South, North, Central, Tharaka
501	Garissa	
520	Wajir	
521	Mandera	
601	Siaya	Bondo
630	Kisumu	Nyando
632	Kisii	Kisii Central, Kisii South, North Kisii
634	South Nyanza	Homa Bay, Migori, Suba, Rachuonyo, Kuria
704	West Pokot	
713	Baringo	Koibatek
730	Nakuru	
739	Kericho	Bomet, Buret
750	Turkana	
751	Samburu	
752	Trans Nzoia	
753	Nandi	
754	Laikipia	
755	Narok	Trans Mara
756	Kajiado	
757	Elgeyo Markwet	Marakwet, Keiyo
758	Uasin Gishu	
816	Busia	Teso
830	Kakamega	Vihiga, Lugari, Butere
832	Bungoma	Mt. Elgon

NB. Other categories excluded (overall share of pop minimal)

Tanzania

Tanzania's regions have undergone less change than Kenya's districts but some of the regions created in 1978 and 2012 have been carved out of more than one original region. As the employment data is not available at district level, I have made the simplifying assumption that a new region was drawn in equal proportion between old regions. This assumption makes a negligible difference to the results. In addition, there were some boundary changes between 1967 and 1978. The 1967 regional populations were calculated using the 1978 boundaries in the 1978 preliminary census report.

Regions	1967	2002	2012
Arusha		Manyara added to Arusha	Manyara added to Arusha
Pwani (Coast)	Mzizima District removed		
Dar es Salaam	Mzizima District added		
Dodoma			
Iringa			Njombe included in Iringa
Kigoma			
Kilimanjaro			
Mara			
Mbeya			
Morogoro			
Mtwara			
Mwanza			Half of Simiyu pop and third Geita pop
Ruvuma			
Shinyanga			Half of Simiyu pop and third Geita pop
Singida			
Tabora			
Tanga			
Kagera/West Lake			Third Geita pop
Lindi	Emp estimated as share Mtwara		
Rukwa	Emp estimates as share of Mbeya and Tabora		Katavi included in Rukwa

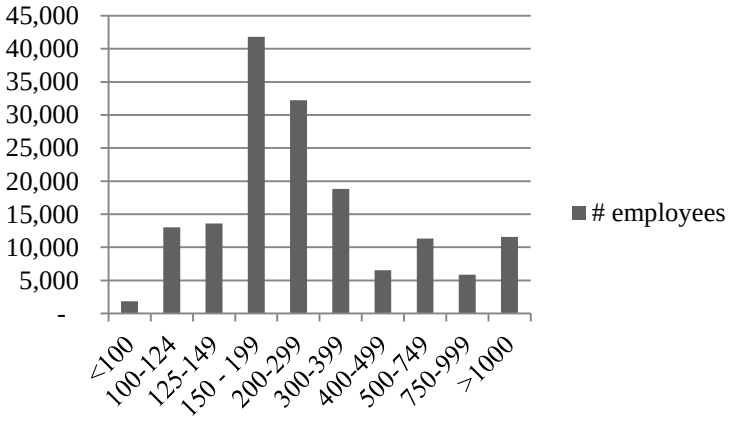
Appendix 3: Formal sector distribution: Figure 5

The data points for this figure come from the Enumeration of Employees Surveys, see sources listed in Appendix 1; the 1990 estimate for Tanzania uses the 1990/91 labour force survey instead. The Tanzanian measure changed slightly over time; the estimates for 1963 and 1965 are based on adult African male employees only, while the 1970 measure includes all adult male citizens. The data from 1976 and on in contrast covers both men and women.

Both the data on public sector wages and household incomes (in the 1960s and 70s) is given in the form of number of employees/households per wage group, see example below for Tanzania 1969. For the purpose of the comparisons in this chapter, it is necessary to transform this wage group data into a continuous distribution.

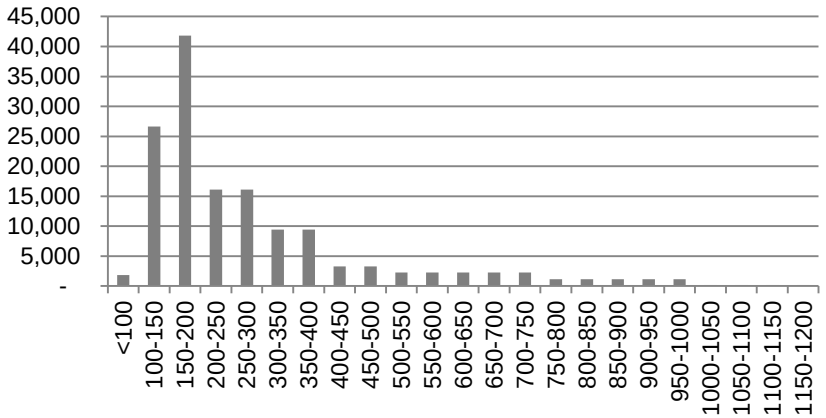
Figure 9. Tanzania: distribution of public sector employees by wage group, 1969

Wage group (shs month)	# employees
<100	1,844
100-124	13,010
125-149	13,614
150 - 199	41,809
200-299	32,202
300-399	18,845
400-499	6,521
500-749	11,309
750-999	5,848
>1000	11,552



I use a simple, shortcut approach in order to recalibrate these bins into even deciles by simply assuming a linear distribution within each wage group.[82] Converting the 1969 data above into even bin sizes to facilitate comparison with other data imposes the following pattern to the data (Figure 10).

Figure 10. Tanzania: distribution of public sector employees by wage group, 1969, assuming linear distribution within bins



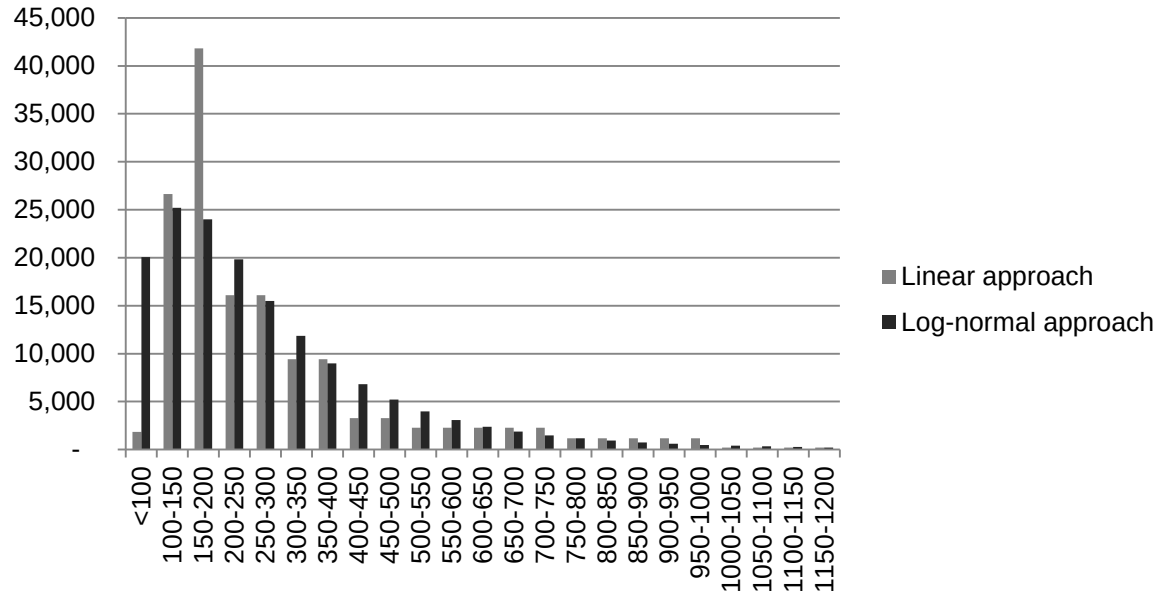
[82] Following the example of Richard Weisskoff, *Income Distribution and Economic Growth in Puerto Rico, Argentina and Mexico*, Review of Income and Wealth, 1970; Michael Hodd, 'Income Distribution in Kenya (1963–72)', *The Journal of Development Studies*, 12.3 (1976), 221–28.

A more sophisticated approach that smooths the distribution, thus reducing the step changes between brackets brought about by arbitrary bin sizes, is to model the distribution assuming a log-normal probability distribution. There is a considerable literature that argues that income data tends to conform well to a log-normal distribution.[83] The challenge in this case is that for most of the available data we lack knowledge of the mean and standard deviation. The mean and standard deviation are therefore estimated so as to minimize the difference between the log-normal distribution and the linear distribution. I start by assuming that all observations fall at the mid-point of their respective income bracket, and that all observations in the bottom bracket fall at the top cut-off, and all observations in the top bracket are twice the bracket cut-off. The mean and standard deviation is then adjusted to minimize the difference between the linear interpolation model and the log-normal model.

For the Tanzanian 1969 data above, this gives the following distribution in comparison to the linear approach. The match is relatively good for the upper part of the income distribution but fits less well for the bottom part of the distribution.

As the two approaches give very similar results for the top decile estimates, however, I choose to report only the simpler approach, which assumes a linear distribution within bins. This simplification appears to make only a small difference to the reported results and does not alter the basic story of change.

Figure 11. Tanzania: distribution of public sector employees by wage group, 1969, comparing the two estimation methods



[83] See previous use by: Maxim Pinkovskiy and Xavier Sala-i-Martin, *Parametric Estimations of the World Distribution of Income*, NBER Working Paper Series (Cambridge, Mass.).

Appendix 4: Kenyan data sources: Figure 6, Tables 6-8

4.1 The 1975 distribution

Kenya did not undertake any comprehensive household budget surveys in the 1960s or 1970s and reconstructions of the income distribution therefore rely on data from several sources. Several authors have used data from the various iterations of the Integrated Rural Surveys, in combination with other sources, to establish a rough distribution and inequality estimates.[84] Because these studies were foremost about poverty, and thus the bottom of the distribution, they tend to have relatively large, undifferentiated brackets at the top. I therefore use the most detailed of the rural income distribution tables I could find, constructed by Smith (1978) based on the 1974/75 Integrated Rural Survey. As this survey only covered small-holder households (roughly 75% of the population), other sources are used to add the missing households to this distribution. Large farming households are added to this distribution based on data reported in the statistical abstract, along with the data on formal sector wages (from the EES), self-employed (income tax statistics report), and urban informal sector (informal sector survey), and rough estimates of the pastoral population from Collier and Lal (1980). This is a rough calculation, and relies on a number of simplifying assumptions in order to reconcile the data from different surveys. Table 15 shows the full distribution and indicates the source of data for each sector. The sources and assumptions discussed below.

Table 15. Constructed income distribution for Kenya, thousands of households, 1975

	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	
Income groups, KSh/month	Small holders	Large farms	Public sector (male)	Private sector (male)	Self-employed (formal)	Informal sector (urban)	Pastoral	Other rural	TOTAL
	IRS 1974/75	Large farm survey	EES	EES	Income tax annual report	Informal sector survey[85]	Collier and Lal	Residual	
0-89	192		2	13			40	38	285
90-189	368		7	137			40	38	590
190-389	415		57	90		44	40	38	684
390-579	137		75	39		7	40	38	335
580-990	94		75	34	2	8			213
990+	26	3	48	37	14	2			129
TOTAL	1233	3	264	349	17	62	160	150	2237

Table 16. Constructed income distribution for Kenya, percentage of each income bracket, 1975

Income groups, KSh/month	Public sector	Private sector	Self-employed and informal	Agricultural and pastoral	Income bracket share of total hhs
0-89	1%	5%	0%	95%	13%
90-189	1%	23%	0%	76%	26%
190-389	8%	13%	6%	72%	31%
390-579	22%	12%	2%	64%	15%
580-990	35%	16%	5%	44%	10%

[84] E. Crawford and E. Thorbecke, *Employment, Income Distribution, Poverty Alleviation and Basic Needs in Kenya* (Geneva, 1978); L.D. Smith, *Kenya: Low Income Smallholder Marketing and Consumption Patterns: Analysis and Improvement Policies and Programmes* (Rome, 1978); Paul Collier and Deepak Lal, *Poverty and Growth in Kenya*, World Bank Staff Working Papers (Washington D.C., 1980); Livingstone.

[85] Results reported in: Crawford and Thorbecke.

990+	37%	29%	12%	22%	6%
TOP 10%	***36%***	***23%***	***9%***	***32%***	***10%***

(1) Small holders comprised 55% of total households. The income distribution in the small holder sector draws on the Integrated Rural Survey from 1974/75.[86] Smith (1978) calculated an income distribution based on this survey which presented number of 'adult equivalents' by income group (in KSh per annum). Adult equivalents were calculated by giving all adults aged 15 and above a weight of 1, and all children below 15 a weight of 0.5. For the purposes of this paper the distribution was recalculated into monthly KSh. per household, assuming an average household size of 6.7 (based on IRS 1974/75), and presuming that 50% of household members were below the age of 15 (based on 1969 census). Furthermore, as remittances were included as a form of income, the income cut-offs were lowered slightly on the basis of the average remittance share of income. Lastly, the IRS also included a significant share of households in the top brackets that were headed by formal sector employees; of households in the top income bracket for instance, 27% of that income was earned from regular or casual employment. I therefore adjust the number of households downwards to account for those whose main form of income was from paid employment, thus avoiding double counting as these households will also be captured by the enumeration of employees.

Note that in contrast to the assumptions made by Crawford and Thorbecke (1978), the so-called intermediate or gap farms with holdings of between 20-50 acres (8-20 hectare) are assumed to be captured by the small holder survey, as the total estimated holdings of 8 hectare and above roughly match the number reported in the 1979 intermediate farm survey.

(2) Kenyan authorities defined farms of over 50 acres as large farms. These were land holdings in the former scheduled areas, and there were roughly 3,000 such farms in 1975.[87] I assume that all 3,000 large farm households had incomes that placed them in the top income bracket.

(3) Formal sector employee households are calculated from the 1975 Enumeration of Employees Survey (reported in the Statistical Abstract). This survey reports the number of employees by wage group. The female share of each wage group is subtracted from the total to give the number of male employees by wage bracket, to avoid double counting. I then assume that each male employee is the head of one household and his earnings are the household's sole source of income. This is a problematic assumption, as many households headed by employees in formal employment had other sources of income that would have raised their overall household income. Thus the formal sector shares in the top income brackets are likely to be under-estimated. As the wage brackets do not overlap perfectly with the income group brackets given by the IRS, I assume a linear distribution of employees within each bracket. This simplification makes very little difference to the overall results.

(4) Data on self-employed, high income households is taken from the income tax department annual report for 1974. It assumes that each tax unit is a household, and the reported taxable income their total household earnings for that year.

(5) Informal sector workers in the urban areas are estimated based on the 1975 informal sector survey (republished in Crawford and Thorbecke, Appendix B). This survey gives average earnings by industrial sub-group. These workers are assigned to income brackets on the basis of the average earnings in their respective industrial sub-group. I assume the same male share of workers as in the formal sector (85%) and thus subtract 15% from each bracket.

[86] Kenya. Central Bureau of Statistics., *Integrated Rural Survey 1974/75: Basic Report* (Nairobi, 1977).
[87] Reported in: Kenya. Central Bureau of Statistics. *Statistical Abstract 1980*.

(6) The number of pastoral households is taken from Collier and Lal, 1980. They are assumed to be distributed evenly in the bottom brackets. This is an arbitrary decision, but as they are unlikely to be found in the top decile or percentile, this is unlikely to affect the reported results.

(7) The missing rural households (presumed to be squatters or landless households) are calculated as a residual (based on the total population size) and distributed evenly in the bottom brackets. This is an arbitrary decision, but as they are unlikely to be found in the top decile or percentile, this is unlikely to affect main the reported results.

The top 10% is calculated from the top two brackets, weighting the top bracket by 0.6 and the second by 0.4, thus capturing the top 10% of the distribution.

The top 1% estimate for 1975 is calculated solely from the income tax department annual report and enumeration of employees, assuming that all those with incomes that put them in the top 1% would pay taxes and making adjustments for women.

Table 17. Composition of top 1% of households

	Public	Private	Self-employed	TOTAL
Source	**EES**	**EES**	**Income tax statistics report**	
# hhs earning >KSh.3000 / month	7	11	7	25
Share of total	29%	46%	25%	100%

4.2 The 1994 and 2005/06 household surveys

Table 18. Details of Kenyan surveys used in analysis

	Welfare Monitoring Survey 2, 1994*	Kenya Integrated Household Budget Survey 2005-2006
Coverage	National	National
Sample size (households)	11,279	13,430
Sampling frame	National Sample Surveys and Evaluation Programme (NASSEP III) sample frame, based on the 1989 Population and Housing Census	NASSEP IV sampling frame, based on the 1999 Population and Housing Census
Sampling	Three-stage sampling technique, sampling by enumeration area, cluster and household, for a total of 1,377 clusters and 11,279 households. Sampling was stratified by district and urban/rural status.	It covered 1,343 clusters, selected randomly on a district basis, and 13,430 households (10 selected randomly per cluster), stratified by district and urban/rural status.
Data collection time period	Started June 1994	May 2005 - May 2006
Data collection	Face to face interviews	Face to face interviews. Households kept diaries to record goods and services purchased and consumed by the household
Produced by	Kenya National Bureau of Statistics, with technical and financial support from the World Bank	Kenya National Bureau of Statistics Funded by: Government of Kenya, DFID, USAID and General Data Dissemination System (GDDS)

***Note:** the 1994 WMS was part of a series of three Welfare Monitoring Surveys (1992, 1994 and 1997). The 1994 survey was chosen for use in this paper because the quality of the survey was

superior to that of 1992,[88] and because it contained more detailed employment and earnings data than the 1997 survey.

4.3 Construction of variables

Public sector-headed households: designated household head reports working in the public sector.

- 1994 WMS: Based on variables mainoccu & empsecto, excluding observations where respondents report zero income from public sector employment and removing those who worked less than 9 months of the proceeding year (unless they were recent hires).
- 2005/06 KIHBS: Based on sector of employment, variable e17, excluding those not reporting any wage income.

A point to note is that the in contrast to the EES the household surveys do not explicitly exclude the military, although they tend to be limited to private households and thus exclude army barracks. However, the military was only 8% of total public sector employment and their inclusion thus make only minor difference to the final results.

Main economic activity of household head:

- 1994 WMS: Based on variable empsecto
- 2005/06 KIHBS: Based on economic activity, variable e03. Paid employees were subsequently divided into public, private and informal sector on the basis of sector of employment (e17). In order to reduce the other category (where household head reports being retired, looking for job or gave no information), all households in this category which reported agricultural income or business incomes of 50% or more of household expenditure were recategorized to the agricultural or business/informal sectors.

Total household consumption:

- 1994 WMS: Based on variable hh_expen (total household expenditure). Includes auto-consumption, but does not impute rent.
- 2005/06 KIHBS: Based on variable hhtexp.

It should be noted that I do not control for differences in cost of living in different localities. While price differences will significantly influence measures of poverty it should have less on an impact at the top of the distribution where a larger proportion of consumption is on goods and services marketed nationally.

Total household income:

- 1994 WMS: Variable constructed on the basis of all listed income sources, from employment, agriculture, business, transfers, rents etc. Includes own consumption. Agriculture, livestock and business income is net of all reported expenses. Sale of livestock included as a source of income.
- 2005/06 KIHBS: Variable constructed on the basis of all listed income sources. Agriculture, livestock and business profits net of reported expenses. Labour costs were excluded as it is unclear if the value of family labour was included. Business profits recalculated to a 12 month basis; those that reported losses were simply excluded (zero business income), to avoid including households with negative income. Only family-owned business income included.

[88] World Bank, *Kenya Poverty Assessment* (Washington D.C., 1995)., Annex 1.

4.4 Data quality checks

i. Do the household surveys underestimate the wealthy?

The systematic under-reporting of top incomes in household surveys is a well acknowledged limitation of such sources.[89] Household from the top of the distribution tend to be missing both because the relative scarcity of such observations which reduces the likelihood that they will be represented in the sample in the first place, and because wealthier households tend to be less likely to agree to be interviewed.[90] This is a particular problem for our analysis when comparing household survey results to those of the EES which drew on data from employers. Presuming that the census doesn't suffer from this same bias (given that every household is legally required to participate), we can compare variables related to wealth across our surveys to see if the 1994 and 2005/06 surveys appear to under-represent the elite (censuses give no income data). One such measure is to compare the educational distribution across samples, presuming that higher education is correlated with income.

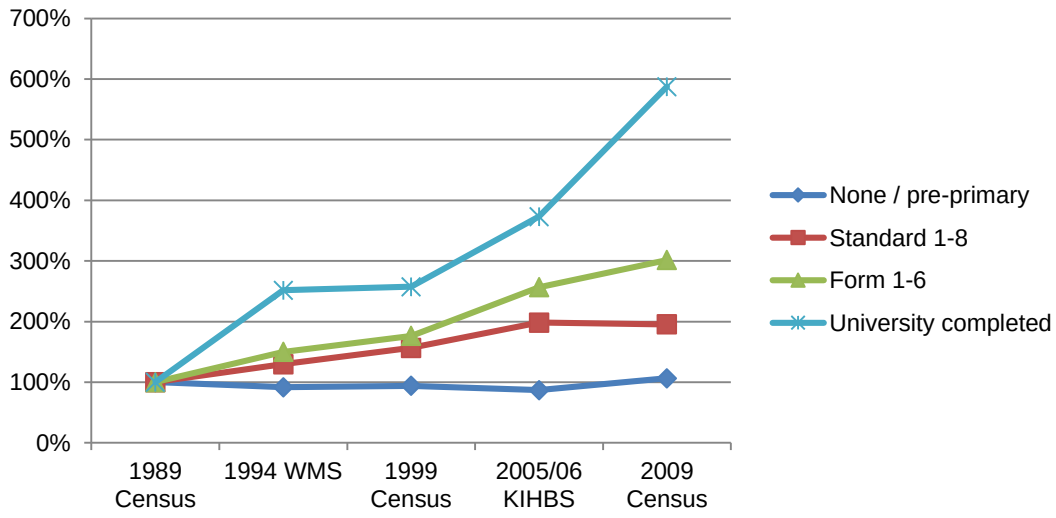
Table 19 compares the Kenyan population disaggregated by broad educational attainment level for each of the household surveys along with the 1989, 1999 and 2009 census results. It suggests a plausible growth in the level of educational attainment over time, with the secondary and tertiary stock growing considerably, the primary educated population growing until 2005/06 and then remaining constant, and the number of people without any education remaining roughly constant, (growth shown in figure 13, where all trends are indexed to 100 in 1989). The 1994 WMS measure of people with university degrees looks too high for the overall trend, and is likely explained by the inclusion of people in the university category who have some university education rather than a completed university degree. Presuming a strong correlation between income and education, it does not appear that under-enumeration has made a significant dent on the top 10% of the distribution. Given that university graduates are only around 1% of the population, and likely concentrated in the top income brackets, the fact that their number is not significantly underestimated suggests that the under-enumerated top of the distribution is likely to be quite small.

Table 19. Kenya: number of people by educational attainment, household surveys and censuses compared

Level of education completed *(respondents >=10 years old)*	**1989**	**1994**	**1999**	**2005/06**	**2009**
None / pre-primary	4,065,300	3,727,437	3,818,800	3,530,151	4,321,240
Standard 1-8	7,594,460	9,844,807	11,900,920	15,069,541	14,831,710
Form 1-6	2,282,720	3,421,677	4,026,200	5,858,245	6,882,970
Trade tests / polytechnics	0	94,923	0		109,660
University completed	55,520	139,684	142,980	207,066	326,210
Other / not stated	67,720	236,637	0	102,357	443,190
	14,065,720	17,465,165	19,888,900	24,767,360	26,914,980

[89] Anthony B. Atkinson.
[90] Anthony B. Atkinson, p. 49.

Figure 12. Kenya: Growth in stock of people by level of education, household surveys and censuses compared (indexed, 1989=100%)



Another way to examine whether the top of the income distribution is under-represented is to compare assets or household characteristics associated with wealth. The results below show the percentage of households reporting household characteristics associated with income: whether the household has a flush toilet, access to electricity, and whether it uses gas as cooking fuel (as opposed to paraffin, wood etc.). The electricity series suggests a relatively even and plausible growth trajectory. The flush toilet measure shows both the 1994 and 2005/6 surveys to have shares below the census trends, and the measure of cooking gas similarly shows a very low level for 1994. These results suggest that there may be some under-representation of the elite but the missing share is likely quite small – possibly in the order of 1%.

Table 20. Percentage of population with elite characteristics, household survey and censuses compared

Household characteristics (% of households)	1989 census	1994 WMS	1999 census	2005/06 KIHBS	2009 census
Toilet (flush/WC) (in dwelling)	9.7%	8.9%	10.0%	8.4%	
Electricity	8.9%	10.2%	13.8%	18.3%	22.2%
Gas as main cooking fuel	2.7%	1.5%	2.4%	3.6%	4.9%

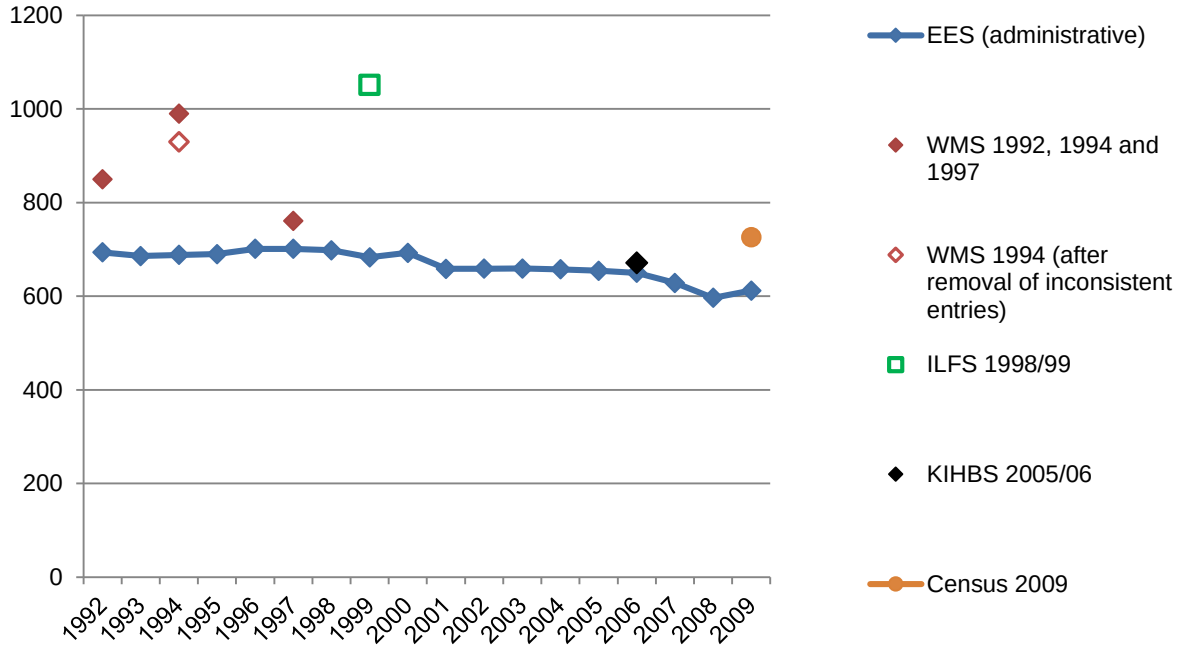
ii. The public sector sample: reliability of reported level of employment and income

Lastly, I examine how well these surveys capture public sector workers, as compared to the Kenyan administrative and census data. On the whole the household surveys and the 2009 census tend to over-estimate the number of public sector employees, as compared to administrative data, as demonstrated in the chart below which plots all available household datasets against the EES series. The 2005/06 survey, however, is very close to the administrative data (it also has the most detailed questions about sector of employment), while the 1994 WMS significantly overestimates the size of the public service, even after we exclude inconsistent entries.

Given that the survey sampling appears relatively robust, one possible explanation for this inconsistency is a looser definition of public sector employee in the household surveys, and possibly also a failure of the central government to properly account for all staff in its administrative records. Keep in mind that

the EES captures data from employers while the household surveys interview employees. The question in the household survey is generally phrased "who does [RESPONDENT] work for?", with a list of allowable answers that include either general public sector category, or a breakdown by broad arm of government (central, local, teachers service commission etc.). One likely difference is that when posed the question, people who are not formally on the government payroll (contractors, consultants, short-term casual labourers – a cleaner at a school paid by a community contribution), will also identify with a public sector employer, while the government's administrative data uses a more stringent definition based on contract type. There also seem to be genuine transcription errors (although these ought to be randomly distributed).

Table 21. Kenya: Estimates of number of public sector employees ('000) by data source



The 1994 WMS estimates a considerably larger number of public sector employees – 990,000 compared to 688,000 in the EES for 1994. Removing inconsistent entries and those who worked for less than 9 months in the past year reduces it to 880,000 – still 28% larger than EES. Average earnings are reported as lower in the WMS, at Shs.4,111/month[91] compared to Shs.4,607/month according to the EES (11% lower), which supports the hypothesis that the WMS is capturing more low-skilled and poorly remunerated casual workers.

In Table 23 we break down public sector employees by industry using the 1994 WMS data and compare it to the 1994 EES. The biggest discrepancies are in the agriculture category, which reports far more public sector employees than the EES, and public administration (titled general govt in the EES). The earning discrepancies are biggest in the sectors dominated by parastatals or frequent use of casual labour – construction, electricity/water, trade and finance, while in education and health for instance, the averages are relatively close. This further supports the hypothesis that the over-estimation is due to the inclusion of low-skilled, part-time or contract workers who are not captured fully by the administrative data. This bias then should have less of an effect at the top of the income distribution (our main interest). Moreover, to the extent that it does reflect poor sampling, it should bias the public sector share by consumption decile upward – the 1994 shares may thus be slightly lower than reported and the drop between 1976 and 1994 in fact larger than suggested above.

[91] Because the earnings data is collected so as to facilitate annual earnings, this estimate is based only on monthly earners and those daily and weekly earners who report working for the entire year.

Table 22. Kenya: Estimates of public sector employees by industry, EES 1994 vs. WMS 1994

Industry	Total employees		Monthly earnings (Shs.)	
	EES 1994	WMS 1994	EES 1994	WMS 1994
Agriculture	67,934	150,345	2,318	2,993
Mining and quarrying	717	3,511	5,516	3,462
Manufacturing	39,311	32,062	4,146	3,286
Construction	29,323	26,610	4,016	3,338
Electricity/water	20,820	18,591	7,115	5,380
Transport/Storage	40,653	50,818	6,258	6,138
Wholesale/Retail trade & Restaurants	6,942	18,297	5,728	3,722
Finance, Insurance, Real estate etc.	17,892	15,660	11,207	5,099
General Government / Public Administration	76,294	237,701	4,723	4,108
Education	217,180	266,335	3,043	4,157
Health	52,271	55,255	4,372	4,517
Other	118,282	115,775	-	
TOTAL	**687,619**	**990,960**	**4,607**	**4,111**

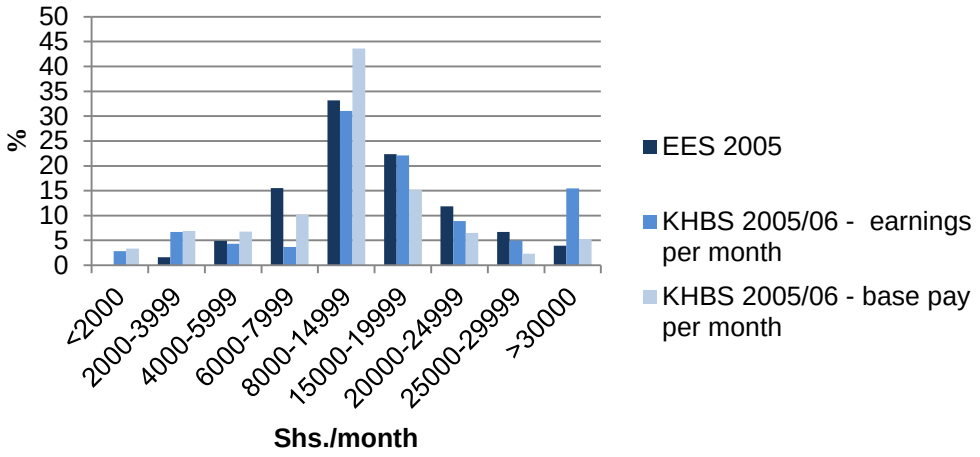
For 2005/06 however, we have the opposite problem, if on a milder scale. The table below compares the 2005/06 survey with the EES for 2005, and finds the estimates to be relatively consistent on both an aggregate and disaggregated basis, if marginally lower than the EES estimate.

Table 23. Kenya: Estimates of public sector employees by branch of government, EES 2005 vs. KHBS 2005/6

	Number of employees		Average earnings*		*Standard deviation*
	EES 2005	KHBS 2005/06	EES 2005	KHBS 2005/06	*KHBS 2005/06*
Central government	189,500	223,526	17,432	17,764	*15,460*
Local government	87,600	85,948	15,608**	16,178	*27,538*
Teachers service commission	232,800	208,465	20,407	19,636	*10,931*
Majority-owned public companies	46,900	45,254	48,897	29,861	*37,558*
Parastatals/SOEs	97,500	83,399	37,015	21,343	*36,868*
Total	654,300	646,592			

Figure 13 compares the wage distribution in the two datasets. It is not entirely clear however, whether the EES wage group data for 2005 includes benefits or only base pay. Nevertheless, comparing the total public sector distribution for the two data sources, both with and without allowances for the KHBS data, shows a reasonably consistent, if not perfect fit. If anything, it appears that the EES data rather than the household survey data, underestimates the right-hand tail.

Figure 13. Kenya: public sector wage distribution, EES 2005 vs. KHBS 2005/06



In Table 25 we also compare the public sector sample by educational attainment to the 2009 population and housing census, the only one of Kenya's recent censuses to provide data on sector of employment. Note that the EES does not provide a disaggregation of employment by educational attainment and therefore our only anchor is the 2009 census. The 1997 WMS is also added to give one further year of observation.

Table 24. Kenya: Public sector employees by educational attainment, different surveys

Age above 25	**1994**	**1997**	**2005/06**	**2009**
None / pre-primary	45,064	20,595	23,661	14,020
Standard 1-8	231,753	134,152	100,251	78,430
Form 1-6 and college	541,812	466,076	472,926	446,680
University	45,593	52,302	45,561	94,740
Other	53,668	41,242	24,842	8,010
TOTAL	**917,890**	**714,367**	**667,241**	**641,880**
Percentage terms				
None / pre-primary	5%	3%	4%	2%
Standard 1-8	25%	19%	15%	12%
Form 1-6 and college	59%	68%	71%	70%
University	5%	7%	7%	15%
Other	6%	6%	4%	1%

Overall the findings are relatively consistent with earlier observations. The 1994 survey clearly over-estimates the number of unskilled and primary educated public sector employees, as shown by the rapid fall in these categories between the 1994 and 1997 WMS. In the higher educational categories (secondary and tertiary), the 1994 estimations look more plausible, given the rapid growth in educational attainment over this same period.

Of greater worry is the underestimation of university graduates in the 2005/06 sample compared to 1997 and 2009. While the number of university graduates was rising rapidly over this time, the discrepancy within the public sector sample is larger than that for the labour force as a whole, which suggests that a disproportionate share of the most highly educated and thus highly paid civil servants were under-sampled or chose not to partake in the survey. The biggest discrepancy are in Nairobi and the Central province, which are also the areas which are comparatively under-sampled (weights are considerably higher for these two provinces). This may bias our estimates of the public sector share of the top decile downwards.

By estimating the number of missing entries of university educated public sector employees we can provide some rough parameters for the possible size of the bias that this may be imposing in Figure 6 and Tables 6-7. Between 1999 and 2009 the stock of university graduates grew by roughly 6% per year; assuming a similar rate of growth in the number of public servants with university education puts the corrected 2005/06 number at 75,000 instead of 45,000, i.e. 30,000 more. Assuming that all of these graduates are household heads and that all have incomes that place them in the top decile (a generous assumption), raises the public sector-headed household share of the top decile from 17% to 20%. While not insignificant, this does not change the broader trend; even with such a correction the 2005/06 public sector middle class share still represents a considerable decline compared to 1994 (30%). Furthermore, the paper includes alternative estimates on the public sector share of the top strata by using asset wealth to stratify households. This analysis (Table 7) includes results using the 2009 census, which provides a much larger sample (10% of the population) and therefore more reliable results. It too confirms the downward trend in public sector shares of the wealthy.

Appendix 5: Tanzanian data sources

5.1 The 1969 distribution

The 1969 estimate was derived by comparing the 1969 national income distribution (on a cash basis) with the salaries of public and formal private sector employees (given by the EES) (Table 26). As in the Kenyan analysis, this comparison rests on the assumption that gross public sector cash earnings are a good approximation of the total income of public sector-headed households. This will underestimate earnings somewhat, as the 1969 survey results showed that employees in the services industry (primarily government) earned on average 82% of household cash earnings from wages and salaries and the other 18% from a variety of sources (crops, trade and business).

Possibly biasing the public sector share upward instead however, is that the income data in the national distribution table excluded production for own-consumption and therefore underestimates the incomes of rural households. This should have less of an impact on incomes among the top 10% and top 1%, as own-production of food is presumably a fairly small share of total consumption at these income levels.

Table 25. Employment by wage group, reproduced from EES, 1969

TSh./annum	TSh./month	All employees (adult male citizens)	*Government (adult male citizens)*	*Parastatal (adult male citizens)*	Public (total) (adult male citizens)	Private sector (adult male citizens)
<1200	<100	11,987	1,457	387	1,844	10,143
1200 - 1499	100-124	24,091	11,947	1,063	13,010	11,081
1500 - 1800	125-149	28,041	10,000	3,614	13,614	14,427
1800 - 2400	150 - 199	68,767	33,450	8,359	41,809	26,958
2400 - 3600	200-299	50,402	21,990	10,212	32,202	18,200
3600 - 4800	300-399	26,411	13,212	5,633	18,845	7,566
4800 - 6000	400-499	10,583	5,033	1,488	6,521	4,062
6000 - 9000	500-749	17,900	9,048	2,261	11,309	6,591
9000 - 12000	750-999	5,642	2,570	1,278	3,848	1,794
>12000	>1000	9,607	4,082	2,070	6,152	3,455
	Total	253,431	112,789	36,365	149,154	104,277

Note: orange cells denotes income thresholds common to both the EES and the household survey

Table 26. Tanzania 1969: Estimated public sector share by household income bracket, EES (grey), total households from 1969 household income survey

TSh. /year	% of households	Total households	*General govt*	*Parastatal sector*	Public sector (total)	Private sector	*Govt empl. share of income group*	*Parastatal emp. share of income group*	Public sector share of income group	Private sector share of income group
0-1499	78%	2,184,000	13,404	1,450	14,854	21,224	1%	0%	1%	1%
1500-3599	16%	448,000	65,440	22,185	87,625	59,585	15%	5%	20%	13%
3600-5999	4%	112,000	18,245	7,121	25,366	11,628	16%	6%	23%	10%
6000-11999	1%	41,720	11,618	3,539	15,157	8,385	28%	8%	36%	20%
>12000	1%	14,560	4,082	2,070	6,152	3,455	28%	14%	42%	24%
Total		**2,800,280**	**112,789**	**36,365**	**149,154**	**104,277**				

5.2. Tanzania household surveys, 1993, 2000/01 and 20111/2

Table 27. Details of Tanzanian surveys used in analysis

	1993 Human Resource Development Survey	2000/01 National Household Budget Survey	2011/12 National Household Budget Survey
Coverage	National, including Zanzibar (excl. for this analysis)	Mainland Tanzania	Mainland Tanzania
Sample size (households)	4,953	22,178	10,186
Sampling frame	National Master Sample frame	National Master Sample frame, based on 1988 census	National Master Sample frame, based on 2002 census
Sampling	Drew from all of the 222 clusters of the National Master Sample frame, although two had to be excluded due to inaccessibility.	two-stage sampling on the basis of the National Master Sample; 1,161 primary sampling units were selected (621 urban and 540 rural), and within these, 24 households from each PSU	Households drawn from 400 clusters (120 from Dar es Salaam, 120 from other urban areas, and 160 from rural areas).
Response rate		The replacement rate (where the originally selected households could not be located or contacted) was relatively high, at 12%.	The response rate (for originally selected households) was 94% (out of a planned sample of 10,400), and a further 398 replacement households were added to increase the sample size to 10,186[92]
Data collection time period	Sept-Oct 1993	May 2000 – June 2001	October 2011 and October 2012

[92] The United Republic of Tanzania, *Household Budget Survey Main Report, 2011/12* (Dar es Salaam, 2014).

Data collection		Each household was visited regularly throughout a month, to assemble monthly data on household expenditures (two households a month in each PSU).	Expenditure and consumption was tracked over a 28 day period, with each household member above the age of 5 given a diary to record purchases and consumption.
Produced by	University of Dar es Salaam with support from British Overseas Development Administration, the Government of Japan and the World Bank	National Bureau of Statistics	National Bureau of Statistics

5.4 Construction of variables

Public sector-headed households: designated household head reports working in the public sector.

- 1993 HRDS: Based on economic activity, variable i24, but excluding households that do not report public sector income as a most important or second most important household income.
- 2000/01 NHBS: Based on main activity, variable s2q08a. Those who reported zero employment income were excluded.
- 2011/12 NHBS: Based on main economic activity, variable S12Q20. Inconsistent entries were removed (roughly 5% of entries); those that reported a public sector employer but not paid employment as an activity, nor any income from this employer.

A point to note is that the in contrast to the EES the household surveys do not explicitly exclude the military, although they tend to be limited to private households and thus exclude army barracks. However, the military was only 4% of total public sector employment and their inclusion thus make only minor difference to the final results.

Main economic activity of household head:

- 1993 HRDS: Based on economic activity, variable i24. Those who reported public sector employment but did not report income from this source have been recoded on the basis of their main reported source of income.
- 2000/01 NHBS: Based on main activity, variable s2q08a.
- 2011/12 NHBS: Calculated based on S12Q9, S12Q10A and S12Q20.

Total household consumption/expenditure:

- 1993 HRDS: Variable constructed based on data on reported weekly, monthly and annual data on expenditure. Dataset contained no aggregate variables so these were constructed (multiplying weekly exp with 52 and monthly with 12). Includes in-kind (barter) trade but excludes consumption of own-production.
- 2000/01 NHBS: Based on exp_adeq.
- 2011/12 NHBS: Based on totc. Includes consumption of own-production. Unlike other surveys it also includes imputed rent.

It should be noted that I do not control for differences in cost of living in different localities. While price differences will significantly influence measures of poverty it should have less on an impact at the top of the distribution where a larger proportion of consumption is on goods and services marketed nationally.

Total household income:

- 1993 HRDS: N/A. Ranking of sources of income by importance from file HR11.
- 2000/01 NHBS: Calculated based on all listed income sources, including employment, agriculture and business. Includes production for auto-consumption. Respondents asked to estimate income over past 12 months for each income category.
- 2011/12 NHBS: N/A. Does not contain consistent income.

5.5 Robustness checks

i. Do the household surveys underestimate the wealthy?

Household surveys tend to underestimate the number of high income earners, both because they are few in number and because wealthier households often decline to partake in surveys. This may bias the results if we are missing a large share of the top of the distribution and if this top has different economic characteristics to those just below them in the distribution (for instance, if no household in the top 3% of the distribution agreed to be interviewed, and public servants comprised the majority of these respondents, then their exclusion would bias our public sector share decile results downwards). By comparing the household survey population estimates, stratified by characteristics associated with wealth, with census results, we can estimate the likely order of magnitude of this under-reporting. As all households are by law required to partake in censuses, and as the census questions do not contain questions on income, they should provide a reasonably accurate coverage of the entire population, including the elite.

In Table 31 the population (above age 10) is disaggregated by educational attainment. While some of the inconsistencies across years are due to differences in classification (as the surveys provide inconsistent classifications for qualifications such as diplomas, post-secondary certificates etc.), there are some signs of under-reporting, particularly amongst university graduates. The 1993 HRDS did not capture a single respondent with a university degree (although with only 0.3% of household heads holding such a degree and a sample size of 5,000 households, this is not entirely implausible). The 2000/01 and 2011/12 household surveys also estimate a lower share of university graduates than the corresponding censuses, which provides further indication of under-reporting. In all cases, however, the household surveys over-estimate the post-secondary category compared to the census, which may also suggest some classification inconsistencies. Either way, the extremely low share of university graduates and diploma/certificate holders suggests that this bias will be fairly small. Treating the full discrepancy in university graduates between the 2002 census and 2000/01 household survey as missing entries would only add 0.3% to the total number of respondents. The effect on our measures of the top 10% would thus be marginal.

Table 28. Tanzania: population estimates by highest level of education achieved (aged 10 and above), household surveys and censuses compared

Educational attainment	1988 census	1993 HRDS	2000/01 HBS	2002 census	2011/12 HBS	2012 census*
None or some primary	10,187,140	9,098,559	12,004,522	12,453,990	3,057,718	682,855
Primary (St.7 and above)	4,811,062	6,612,419	8,930,758	8,924,994	8,930,758	11,230,000
Secondary (Form IV and above)	261,682	507,327	699,634	850,823	1,713,794	1,745,016
Post-secondary (incl. diploma courses)	68,379	87,359	96,192	72,878	249,155	114,922
University	21,634		32,759	117,588	146,197	324,000**
Other / unknown	25,567	514,236		2	12,088,245	
Total	**15,375,464**	**16,819,900**	**21,763,865**	**22,420,275**	**26,185,867**	**14,096,793**
In percentage terms						
None or some primary	66%	54%	55%	56%	12%	

Primary (St.7 and above)	31%	39%	41%	40%	34%	
Secondary (Form IV and above)	2%	3%	3%	4%	7%	
Post-secondary (incl. diploma courses)	0.4%	0.5%	0.4%	0.3%	1.0%	
University	0.1%	0.0%	0.2%	0.5%	0.6%	
Other / unknown	0.2%	3.1%	0.0%	0.0%	46%	

*Note: 2012 census report only provides data on respondents who have completed their studies; for post-secondary graduates this should not provide any major bias, but means the 'none' and 'primary' categories are significantly smaller than in other years.
** University and other related education.

Table 32 repeats this exercise using household characteristics indicative of wealth. It compares the share of households reporting high status household characteristics across the household surveys and censuses. While there are some inconsistencies that are likely due to data quality problems (it is unlikely that electricity access fell between 1993 and 2002 for instance), on the whole the trends are reasonably accurate. The household surveys underestimate the share of households with flush toilets marginally, while overestimating access to electricity. On the whole the margin of error is in the order of 1-2%. While not conclusive, this does suggest that we are capturing a broadly representative share of the top decile, although our measures of the top percentile may be less accurate.

Another point of note moreover, is the low share of households with characteristics associated with middle class lifestyles. Less than 10% of Tanzanian households have flush toilets, and only in recent years has electricity access exceeded 10%. More than 95% of households still do their household cooking over coal or wood fires. This is indicative of just how narrow the Tanzanian elite remains. Even our top 10% then, is a fairly diverse group of households, containing households with considerable wealth as well as those towards the bottom of the bracket who still live in modest homes without electricity or running water.

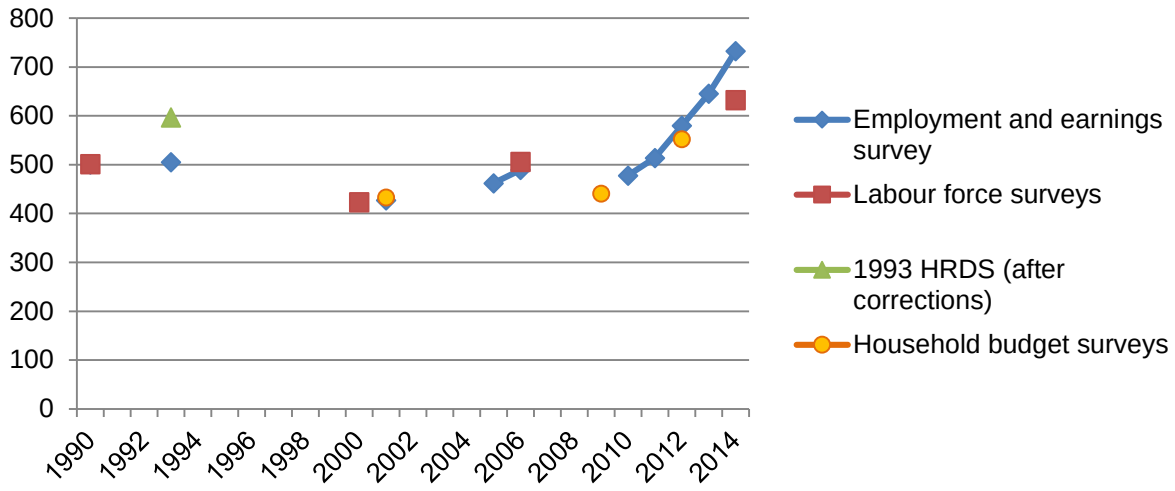
Table 29. Tanzania: indicators of household wealth, household surveys and censuses compared

Assets/characteristics, % households	1988 census	1993 HRDS	2000/01 HBS	2002 census	2011/12 HBS	2012 census
Flush toilet	4%	2%	2%	3%	8%	13%
Electricity	6%	11%	10%	9%	18%	
'Modern' cooking fuel (electricity, gas or kerosene)		3%	6%	5%	4%	5%

ii. The public sector sample: reliability of estimated level of public employment

Most of the surveys give reasonable estimates of the total number of public sector employees, albeit with an estimate from the 1993 Human Resource Development Survey which is somewhat higher than other contemporary sources (even after cleaning of the data).

Figure 14. Tanzania: estimated size of public employment ('000), various sources



The 1993 survey was not designed with labour market analysis in mind and the questions on employment are therefore very limited, making it hard to assess the reliability of the measures. However, as a simple exclusion criteria, people who report public sector employment as their economic activity but do not list public sector pay as an important income source (i.e., first or second most important source of income) were excluded from the pubemp variable. Despite this adjustment, the number of respondents reporting themselves as working for the government is considerably higher than the estimate from administrative sources (479,000 compared to 355,000), while the number in the parastatal sector is slightly lower than contemporary sources. Moreover, their educational attainment on the whole appears to be lower than what the 1990/91 labour force survey would suggest. The sample thus likely includes households relying on occasional or part-time public employment. If only those households that reported public sector pay as their main income source were included, the number would fall to substantially to 326,000 in the government sector and 90,000 in the parastatal sector. The choice of public sector employee definition has some, although not massive, effect on the public sector share of the top decile. Without any correction to the variable, the top decile share would rise to 27%; using the even tighter defining – those households who report public sector pay as their main source of income – the share drops to 20%.

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